

**PREMIER COMPUTERS**  
3 UNION COURT, DITCHFORD,  
SURREY GU9 1AA, ENGLAND  
Tel 01 940 1134 (ex 926734)  
Specialists in the Leasing  
of all IBM systems

## NEWS IN BRIEF

Dol to set up  
own viewdata

THE Department of Industry is to set up an inhouse viewdata system which it is to develop itself. Plans so far are for a pilot system to be running by the autumn on a Dol mainframe with between 30 and 40 small business-type terminals, probably with colour displays, and could access Prestel.

## Printing service

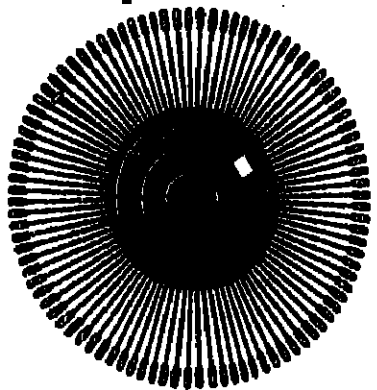
CMG has launched a printing service based on a Honeywell Page Printing System installed at its Croydon bureau. The aim is to help computer users to cope with peak loading without an excessive investment in printers.

## Quick deliveries

SOME US customers with several 4341s on order are saying that IBM is pressing them to take delivery of second and third machines ahead of schedule. In the UK, however, IBM is still quoting delivery in about 20 months for users placing orders now.

## Joint venture

A JOINT venture has been set up by Olivetti and Memorex to establish a plant in Italy to make drives for 8-inch discs. Memorex has formed a subsidiary to provide 40% of the capital with the remainder coming from Olivetti. It is planned to be in production by the end of the year.

'One-stop' supplies for  
word processing

- \* Oume and Diablo compatible print wheels
- \* Oume and Diablo compatible ribbons
- \* Bin and 5 1/4 inch floppy disks
- \* Olivetti compatible mini disks
- \* Continuous A4 custom forms
- \* Continuous stack filing forms
- \* Continuous self-adhesive labels

**Jmf** JMF (COMPUTER SUPPLIES) LTD  
For quality and service - 01-428 0911

Premier House, Chantry Place, Redstone Lane, Harrow, Middlesex HA3 6BQ

## The right image of our electronic future?

VISITORS to the Challenge of the Chip exhibition at the Science Museum, London, now in its sixth week, could be forgiven for assuming that a new theme had been chosen for the show, quite different from that advertised — namely, the fallibility of computers. A feature of the show when it opened (CW, March 6) was the large

number of hands-on exhibits provided for visitors to try; sadly, a large number of these are now not working.

Games, special purpose control equipment, personal computers, and other equipment in large numbers are either dead, or displaying "out of action" signs, or are absent, leaving gaping holes in the walls.

Other displays, such as a micro-controlled air conditioning system or an electronic metronome, respond when their buttons are pressed but in no predictable fashion. An electronic colour-coded tune-playing game merrily makes music in its own way irrespective of how visitors twiddle its knobs.

If an exhibition were intended to reassure people that computers are far from being omnipotent monsters that are about to take over the world, it could hardly be better arranged.

As for presenting a realistic picture of the world, the show scores top marks. A micro-controlled train set emulates British Rail admirably, by having only one out of four trains running. Post Office operators are cunningly aped by a telephone answering machine that steadfastly refused to answer the telephone.

Meanwhile staff are pressing ahead with repairs, both to the machines and the image of our Electronic Future.

And the educational value of the show? One young lady, a graduate, attentively watched Intel's film on bubble memories, twice through. After this she remarked: "I didn't understand one word of it."

IBM look-alike after  
Cambridge deal

LATEST entrant to the IBM compatible systems market in the UK is Peripherals Computers Memories and Leasing of Cobham, Surrey. PCML is finalising an agreement with Cambridge Memories of Massachusetts under which it will sell IBM compatible Cambridge processors as part of complete end user systems. PCML will get its peripherals from suppliers like Storage Technology.

Meanwhile California firm Two Pi, a small subsidiary of Phillips, is understood to be finalising an agreement to supply its IBM compatible V32 mini-computer to Nixdorf on an OEM basis. Nixdorf is expected to exhibit the V32 at the Hannover Fair later this month.

Nixdorf was not prepared to comment on the deal but a Two Pi spokesman in California simply confirmed that extensive discussions had been held with Nixdorf. He added that Two Pi was also talking to Xerox in the US about an OEM agreement.

Joseph Cray, boss of Cambridge Memories, told Computer Weekly that the agreement with PCML had not yet been signed, adding that PCML was free to offer systems based on Cambridge processors to prospective customers.

One Cambridge machine, the 1640, roughly matches the IBM 370/148 in performance and was first exhibited in Europe at the Systems 79 show in Munich by Digital Computer Peripherals of Frankfurt, which is selling the 1640 as part of complete end user systems (CW, September 27, 1979).

While the Cambridge machines are intended as direct

replacements for medium scale IBM mainframe processors, the V32 from Two Pi is aimed at big end users or computer systems companies looking for a low cost IBM compatible machine to run dedicated applications or systems software.

National CSS, the big time sharing company, was the first significant OEM customer for the V32 in the US and offers the machine as part of an end user system called the 3200. Its most important feature is VPS, a version of VPCSS the powerful time sharing operating system that forms the basis of the CSS time sharing service.

Schools' Prestel  
micro plan

THE development of a telefont-based capability for microcomputers in schools planned by the Council for Educational Technology (CET, November 15, 1979) has begun in earnest now that the council has taken delivery of its Research Machines 3602 and entered into a joint development agreement with the company.

The council already runs an umbrella information provider service on Prestel for which pages are submitted by nine sub-information providers in education and its editor Mike Brown is writing a program in Z80 assembly language to turn a 3802 into a viewdata terminal capable of loading telefontware from Prestel or small databases in schools. He has already written a program to maintain and use a viewdata database on a 3802.

The software is expected to be available from Research Machines by August in time for the next academic year and to sell for £30. Users should then be able to load the database maintenance program from the council's Prestel database.

NEB backing will help  
firm catch up orders

BACKING from the NEB for Technologies of Liverpool, (CW, January 31) means the three-man firm will be able to expand and catch up with the backlog of orders for its TCS Prestel-compatible microcomputer.

The backing takes the form of setting up Technologies Computing which is jointly owned by Technologies, the NEB and Sapling Enterprises.

Sapling is also a new company set up last year by the NEB with Colin Grant, a Manchester-based consultant, to provide management skills to small companies to help them grow.

The primary product is now a £2,900 editing terminal with two 5 inch floppy discs and 18 kilobytes of RAM. With two 8 inch floppies it costs £3,400.

It has both an internal modem and a V24 interface for connection to an external modem and is being developed to provide a local viewdata database for a small number of terminals.

The three founders — Andrew Polkowski, Laurence Cook and Mike Siddles — were all electronics engineers from Plasey.

It has both an internal modem and a V24 interface for connection to an external modem and is being developed to provide a local viewdata database for a small number of terminals.

OPM pleaded guilty to writing cheques for which no funds were available at the time in a bank at Gretna, Louisiana, called the First National Bank of Jefferson Parish. The bank is now majority owned by OPM.

Printed in Great Britain by Q.B. Limited, Shepperton Place, Chester, CH3 3LJ, and published by IPC Electrical/Electronic Press Ltd, Dorset House, Stamford Street, London, SE1 8LU

Burroughs  
wins \$32m  
Nato net  
contract

BURROUGHS has won a \$32 million contract from Nato to supply message switching computers for Scars-2. This is a network that will enable real time data to be transmitted between local Nato units and Supreme Headquarters Allied Powers in Europe, Shape.

Scars (status control alerting and reporting system) is one of several major Nato communications projects providing big business for the DP industry.

Another project involving a big command and control network called ACE-CCIS, has provided an international consortium that includes Logica with an \$8 million study contract (CW, January 10).

In addition to Scars, another large scale message switching network called Camps (computer assisted message processing system) is being set up specifically for handling telegram messages between Nato member countries. The contract, worth more than \$25 million for equipping Camps with Danish computers, went to Danish electronics firm Chuslan Rosing (CW, January 17) who bid against Burroughs for the Scars contract. The contracts for Scars and Camps have both been expected for two years (CW, May 18, 1978).

The message switching computers being supplied for Scars are defence versions of the new Burroughs communications processors, the CP 9400 and 9300 (CW, January 24).

## Leasing hit

From front page  
follo of railcars. Irel reported a loss of \$175 million in the third quarter of 1979 and has published no accounts since.

In another development involving the US leasing industry the New York based lessor, OPM, which has offices in London, Paris and Cologne, has been fined \$110,000 for banking offences of a criminal nature. Under the plea bargaining procedures used widely in US courts, OPM lawyers decided to plead guilty in return for charges against OPM executives being dropped.

OPM pleaded guilty to writing cheques for which no funds were available at the time in a bank at Gretna, Louisiana, called the First National Bank of Jefferson Parish. The bank is now majority owned by OPM.

Printed in Great Britain by Q.B. Limited, Shepperton Place, Chester, CH3 3LJ, and published by IPC Electrical/Electronic Press Ltd, Dorset House, Stamford Street, London, SE1 8LU

Printed in Great Britain by Q.B. Limited, Shepperton Place, Chester, CH3 3LJ, and published by IPC Electrical/Electronic Press Ltd, Dorset House, Stamford Street, London, SE1 8LU

start small  
and grow  
large with  
digico

Apple II software  
Apple Computer Inc.  
1 Apple Drive, Cupertino, CA 95014  
Tel: (415) 961-1000

## Briefing

IBM price cuts  
herald new WP

PRICES of IBM's System 6 word processor range have been reduced by around 20%, giving for example a new price of £13,563 for the Model 6440 with ink jet printer and floppy disc. The cuts are being taken to indicate the imminent introduction of a new WP product to replace the unsuccessful System 6, probably to be made by General Systems Division for sale by Office Products Division.

## NRDC backs SID

THE government-funded National Research Development Corporation is backing development and sales of systems house SPL's SID-Plus enhancement package for users of the General Automation SID interface device for connecting banks to the Swift interbank funds transfer network. A prototype of SID-Plus has been running at three Norwegian banks for four years (CW, August 5, 1976).

## Peripherals 80

PERIPHERALS from over 40 suppliers will be on show next Wednesday and Thursday, April 16 and 17, at the Peripherals 80 exhibition at London's West Centre Hotel, Lillie Road. Details: page 17.

## Troubled issue

WE apologise to readers and advertisers for the absence of some regular features and for the reduced news coverage for the second week running in Computer Weekly. The problem was caused by circumstances beyond our control.

## COMPUTER WEEKLY

Number 701

Thursday, April 10, 1980

Price 20p

## Apex takes tougher line on technology

WHITE-COLLAR union Apex is to fight for a four-day, 30-hour working week and more comprehensive training and retraining schemes for its members. It will also refuse to co-operate with any company which plans to introduce new technology without first signing an Apex technology agreement.

A technology agreement stipulates not only the way in which computers and associated equipment should be introduced into a company but also the minimum job conditions and benefits that will result from the changes.

And in line with the above proposals, the European Communities Commission has identified the need for more extensive information on new technology, greatly enhanced training facilities for workers and better consultation and planning at the place of work.

The Apex strategy is outlined in the union's latest report, entitled Automation and the Office Worker. It is the second report on technology in the office environment, the first being Office Technology — the Trade Union Response, which was published last year (CW, March 22, 1978).

A description of the types of equipment that office workers can expect to be using in the near future is given, as is an analysis of how Apex sees such technology affecting employment levels.

While it feels that nothing it does can replace government or EEC intervention, Apex makes it quite clear that it intends to inform its members as best it can by continuing to run two-day, three-day and one-week intensive training courses for staff representatives.

Dealing with the predicted changes in its own way, the European Communities Commission has said that it is preparing a summary of the training requirements for new technology based on data provided by the EEC Consultative Committee on Vocational Training and is setting up a team to co-ordinate and analyse information produced on the subject.

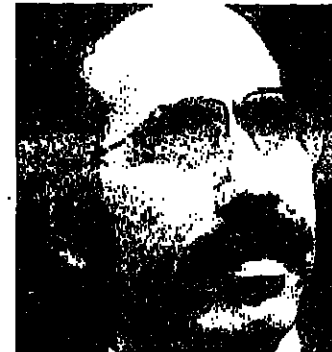
Big threat to IBM  
as rivals team up

IBM faces the most serious potential threat ever to its base of large-scale mainframe sites following the plan by IBM-compatible equipment manufacturers Amdahl and Storage Technology to merge.

Amdahl has been bidding to expand in the IBM market for some time but a planned link-up with Memorex fell through last year (CW, November 22, 1978).

The combined turnover of processor manufacturer Amdahl and peripherals supplier Storage Technology in 1979 was about \$800 million and the two firms are growing more rapidly in real terms than most companies in the mainframe market even though they are both going through hard times.

The letter of intent signed by Amdahl and Storage Technology last week outlined terms which would give their respective



JESSE AWEIDA: Merger by July...

shareholders almost exactly 50% of the new company even though Storage Technology's turnover is about 60% higher and its overall stock value marginally greater.

Jesse Aweida, chairman of Storage Technology, is to get the top position in the new company as chairman and chief executive, while Amdahl chairman Gene White has been lined up as deputy chairman. The president and chief operating officer will be the existing Amdahl chairman, John Lewis.

Aweida told Computer Weekly that a definitive agreement

would probably be signed by the end of this month and that the merger would probably be completed by July. Asked about the degree to which the marketing operations of the two firms would be integrated, Aweida said that the establishment of combined sales offices made sense but he was not sure about sales people from both companies selling the complete product range.

Aweida pointed out that the new company would be given a "very descriptive" new name.

Asked by Computer Weekly why the negotiations with Storage Technology were more likely to be successfully completed than Amdahl's talks with Memorex, Gene White at Amdahl commented that there was a "fundamental agreement" between the boards of Amdahl and Storage Technology. He added that the shareholders of Storage Technology were "a lot happier" about the merger than Memorex shareholders had been.

However, the value of Storage Technology shares closed 50 cents down at \$13.875 on March 31, the day the merger was announced, while Amdahl shares closed 87.5 cents up at \$19.25. There are 24.8 million Storage



GENE WHITE: Fundamental agreement...

Technology shares outstanding and each stockholder will get three-quarters of a share in the new company for each share held in Storage Technology. Holders of Amdahl's 18.8 million shares will receive the same number of shares.

Technology shares outstanding and each stockholder will get three-quarters of a share in the new company for each share held in Storage Technology.

However, the value of Storage Technology shares closed 50 cents down at \$13.875 on March 31, the day the merger was announced, while Amdahl shares closed 87.5 cents up at \$19.25. There are 24.8 million Storage

**Data Preparation**  
We have the capacity to punch your peak loads, file set-ups or regular work on 80 column cards. Croydon: Nada Waugh, Telephone: 01-688 6047

Peter Merrick Associates Ltd  
International Computer Services  
Century House  
57-59 Epsom Road  
Croydon CR0 1TB

GDC in UK  
micro  
initiative

FOUNDER of Control Data, William Norris, has put forward proposals for a British consortium to set up a micro manufacturing operation. This comes as Immos, the National Enterprise Board's microprocessor venture, still waits to hear if the government is going to provide the promised £25 million.

However, GEC has now expressed an interest in Immos and may relieve the government of the need to put any further money into the venture.

Norris was in the UK over Easter to talk on high technology in education at a convention organised by the Co-operative Union in Torquay. He took the opportunity to raise the consortium idea and talked with ICL, as a manufacturer, and Shell and Pilkington, the glass makers, as potentially big users.

Norris said he was not interested in taking a share in Immos because he did not consider the project was big enough. Such a venture needed at least £75 million to get off the ground and then continued big investment. He was concerned about his company's access to micro components, especially high-speed devices, and, possibly as a customer, he did not think that Immos would be in operation soon enough.

ICL said that if it did get involved in a UK micro project it would most likely be in the test and design area, in which it already had some capacity.

GEC's interest in taking a share in Immos is thought to be because of doubts about its joint venture with Fairchild, which has been at a virtual standstill since Fairchild was taken over by Schlumberger last May.

## Cut your Disc

System Industries' 9400 range will help cut your disc storage costs dramatically. Our high-capacity, fully DEC RMO 2/RMO3 compatible disc systems are available for any DEC computer with a unique connection to the 881.

cache bus or 881, 87 or 285 Megabyte capacity per cartridge. Interfaces are available for the 1170 with direct connection to the cache bus or the VAX 11/780 with direct connection to the 881.

Prices for standard unit, 87 Megabyte systems start at around £8,600, fully installed to the end user. Substantial OEM discounts are offered.

## Storage Costs

System Industries' 9400 range will help cut your disc storage costs dramatically. Our high-capacity, fully DEC RMO 2/RMO3 compatible disc systems are available for any DEC computer with a unique connection to the 881.

cache bus or 881, 87 or 285 Megabyte capacity per cartridge. Interfaces are available for the 1170 with direct connection to the cache bus or the VAX 11/780 with direct connection to the 881.

Prices for standard unit, 87 Megabyte systems start at around £8,600, fully installed to the end user. Substantial OEM discounts are offered.

**VSAM?**  
Export it the logical way with  
**FAVER**

The fast Virtual Export/Restore Utility from Westinghouse Management Systems SA

- For all IBM OS & DOS/VS type installations
- Extremely high performance
- Comprehensive export/restore facilities including aggregate cluster reference
- Simplified JCL & control cards
- Back-up tape verification

Westinghouse Management Systems S.A.  
1 High Street, Edgware, Middx HA8 7DP  
Tel: 01 951 1616

**Plato in the home**

CONTROL Data is to start installing its Plato computer-based education terminals in homes in the US, while in the UK it is to introduce a new Plato course called Excel.

The US home Plato system is to be called Homework and it is initially intended to retrain medically-disabled people. Homework is to be a profit-making service and its development from an internal CDC training programme in which 10 disabled employees were retrained in their homes.

It is likely that the Plato-in-the-home idea will be extended to non-disabled users in the near future.

To be offered to UK users of Plato in June, when learning centres in Bristol, London, Manchester and Birmingham will open, the Excel course will help identify areas of their work in which they need development. Topics include: com-

**INSIDE...**

- Computervision on the Amdahl-BTC merger
- Letters to the Editor
- Drivak Naxos training
- Downings by Chip
- Michie's Privatview
- IBM America \$100
- Software File
- Op Spot
- First M220 order
- People and Events
- Micro News
- Price for 4341
- Effects of the Budget
- The Sales Bill

**JOBS: 12-15 AND 20-31**

**System Industries**  
9400 range will help cut your disc storage costs dramatically. Our high-capacity, fully DEC RMO 2/RMO3 compatible disc systems are available for any DEC computer with a unique connection to the 881.

cache bus or 881, 87 or 285 Megabyte capacity per cartridge. Interfaces are available for the 1170 with direct connection to the cache bus or the VAX 11/780 with direct connection to the 881.

Prices for standard unit, 87 Megabyte systems start at around £8,600, fully installed to the end user. Substantial OEM discounts are offered.







## Downtime

by Chad

### Blinkin' bad show, what...

WE scribbles are of course overworked and underpaid, but the job has some compensations. Occasionally we are given little presents by the firms we write about, presumably in gratitude for having sat through tedious presentations without complaining too much.

Now don't get your noses a-quivering, or start thinking there's another bribe scandal on the way! We don't let these gifts colour our judgment in the teeniest way over what we write. But, come to think of it, maybe we might.

A while back everyone on the paper got given a little pocket calculator by a certain computer company. Already both mine and my colleague Tim Palmer's are on the blink. I mean literally — in the middle of important calculations the displays blink on and off in haphazard fashion. It is hardly surprising that I am tempted to wonder whether this company's computers are prone to blinking on and off too.

Our illustrious editor has a

retractable ball pen from a celebrated mainframe manufacturer. If you push one particular button on the pen, part of it flies across the room. Maybe it's a secret weapon!

Luckily the calculator is small enough to fit in an airmail envelope if it has to be sent to Japan for servicing. Anyway, it's in good company in its ailing condition. My television, and my cassette recorder, and my electronic alarm clock are all on the friz with similar chances of ever getting them fixed. I am told that if I take a day's leave off work to carry the TV to some place in Edgware there might be someone there who would do it for me.

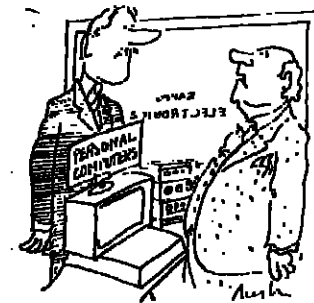
The cassette recorder, on the other hand, has to go to Tottenham. Where exactly I don't know. Their phone is always engaged.

And I spend so much time at conferences listening to people say that all this microelectronics is going to put thousands of service men out of work! Lewis Carroll, thou shouldst be living at this hour.

### 20th Century Faux

THE Post Office has been blowing its own trumpet quite a bit lately to promote Prestel. All this fuss over 20-year-old technology, say I in my cynical way. Anyway, at the Viewdata 80 exhibition the PO had a show called Fanfare for Prestel, compered by master showman and outgoing Prestel director Alex Reid.

The main part of the show was a film with Leonard Rossiter which was quite the most amateurish concoction I have seen in a long time. Crackly sound, flickering picture, and the plot? Well, it was called "The Prestel Connection" and Rossiter played a private detective who finds Prestel a much more useful source of information than his usual methods. The Post Office is in no danger of winning an Oscar.



"I'd like something in the Regency style for the drawing room..."

## MICHIE'S PRIVATEVIEW

### Race to beat acceleration of complexity

AS a response to widespread economic stagnation and accompanying crises of confidence with regard to technology, the EEC's Forecasting and Assessment in Science and Technology programme seeks to bring modern analytical methods to bear upon these ills with the aim of combating them. The phenomena certainly stem from real enough. Yet superficially they are distinctly odd.

Take economic growth, or non-growth. The productive capital of industrial nations is not actually shrinking. Moreover it is being steadily transformed in nature by the continued advance of technology. What is the nature of this steady transformation? Fixed capital is getting more productive. I type this article 50% faster than I would have done before the electrification of typewriters, and six men can now mow meadows than is needed to offset the rental of their mowing machines.

Moreover, technology is not merely advancing at a constant rate. All reasonable scales of measurement show it to be accelerating. So something nasty must be in the works, clogging up that cornucopia which by now should surely be delivering well-merited abundance to us all.

Everyone, I think, united in a common sense of grievance about the matter. But people differ as to which component in the whole process should be in the pillory. To some it is evident that the shop stewards of our land, possibly in league with tightly-knit politically-motivated subversives and wreckers world-wide, have worked the whole baleful trick.

To others the master culprits are to be found in the board-rooms of the giant corporations and finance houses, possibly in league with tightly-knit politically-motivated multinationals and cartels, topped up with a gnome or two of Zurich.

There is a third school of thought, not inflammatory like

the foregoing two, but twice as loony. This school puts the blame on technology itself. I have remarked before on a fellow-citizen of mine who set out systematically to punish a non-vending vending machine, and was not satisfied until all future capability had been removed from it.

Perhaps, though, the anti-technology school is not entirely loony. At least we should consider the idea, since the analysis given earlier makes technology look uncommonly like a non-vending vending machine.

I believe that we have to take a long backward look over the sweep of our history, and ask whether there has been any settled evolving pattern running through it. Such a pattern does stand out. The discovery of agriculture set it going. But through all the dozen or more millennia since then our ancestors seem to have been quite unaware that a unidirectional process was in train until the last phase of acceleration during the 19th and 20th centuries. The consistent pattern, step by painful step, with many falterings and setbacks, has been the augmentation of man's comprehension and control of his world.

How has it come about? Without doubt through technology, leavened in recent centuries by a pinch or two of science. I use "technology" in its broad sense to include all the useful arts.

So if science and technology give us comprehension and control, and if their power and extent is accelerating, does it not

follow that so too must man's mastery of his environment, including the production of wealth? Here we come to the nasty bit.

If the said environment stayed put, then well and good. But comprehension and control must be measured as a ratio. Specifically we must relate the power of our instruments for comprehending and controlling to the complexity of the environment to which they are to be applied.

A prime consequence of the rise of technology has been that man's environment is increasingly a man-made artefact, and one which, in the nature of the whole process, becomes more and more complex.

So let us go back to the comprehension/complexity ratio. So long as the acceleration of the numerator exceeds that of the denominator, we are winning. If it is the other way around, then sooner or later complexity begins to be spawned faster than our ability to understand and subdue it.

The flip-over point, in my view, was reached by industrial man at some point during the past decade. Fewer and fewer people are employed to produce. More and more are employed in the effort to keep track of what is going on.

Fortunately there is contained in technology's most recent spurt the germ of the counter-measures which we need. I refer to information technology, which, God knows, makes its own contribution to social complexity. It does, however, contain the potential for enormous



Professor Donald Michie is head of the Machine Intelligence Research Unit at Edinburgh University.

ously augmenting the human ability to pierce the infrastructural chaos of our lives with generalising laws and insights.

The relevant branch of study, where artificial intelligence overlaps automation, has been termed "soft" automation. It is increasingly needed for cleaning up some of the complexity-pollution which hard automation tends to generate.

In its capacity to give seven-league boots to the complexity-fighters — statisticians, economists, planners, executives, production engineers, administrators, politicians, teachers and instructors, as well as the scientists and technologists themselves — information technology has scarcely had a chance yet to show its paces.

One of the troubles is that at Cabinet level information technology is regarded as just one more lump in the technological porridge. But now we have a Prime Minister who is a trained chemist, a field equivoled between science and technology.

I nourish a lively hope that the porridge approach to our perplexities will give place to more differentiated styles. Let us hope that the information engineers will be passed the ammunition before the complexity hits the fan.

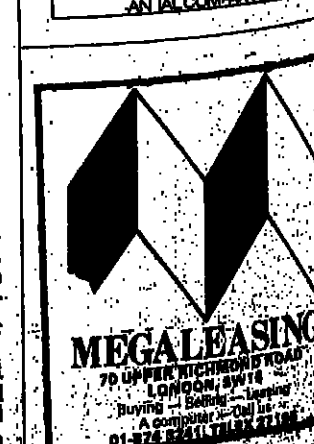
#### REFERENCE

Forecasting and Assessment in the field of Science and Technology. Subprogramme B: Information Society. Report FAST/ACM/79/14-2E. Directorate-General for Research, Science and Education of the Commission of the European Communities, Rue de la Loi 200, B-1049 Brussels, 1979.



CH8 House, 33 Church Street, Basingstoke, Hampshire RG21 1QQ. Telephone: (0256) 55431. Telex: 858048.

**CRB**  
AN AL COMPANY



10 OFFER VOUCHERS

## Doctors' DP study

A FEASIBILITY study on how doctors can best use computers is to be carried out by Scicon for the British Medical Association. The data processing needs of doctors, and whether these can best be satisfied by central mainframes or local microcomputers, will be investigated, together with the question of how much doctors would be prepared to pay for such a service.

The BMA is hoping to get government funding to cover 50% of the £21,000 cost of the project. The association itself will then pay 25% and Scicon the last 25%.

There have been local medical computer projects such as the Exeter Community Health scheme, but this is the first time the issue has been looked at nationally. According to Dr John Dawson, an undersecretary at the BMA, there are at present 20 to 30 doctors in the country using computers, as opposed to the 25,000 GPs there are in total, working out of 8,000 surgeries.

# Change of tack over 8100 DMS

IBM has changed tack and delivery dates on the DMS development management system for its 8100 remote processing system. The original product generated Cobol source code which then had to be compiled and linked-edited before it could be debugged — a lengthy and not

necessarily very easy procedure since the automatically generated code did not look much like programmer-generated Cobol.

Instead, IBM is now offering what is, in effect, high level language which can be used at a terminal to write programs

into a screen format, test them interactively and change the variables until the program is satisfactory.

Once the program is complete, it is transmitted to the site where it is to be used, since IBM conceives of the 8100 normally being used in multiple loca-

tions, one of which will be a central development site normally adjacent to the host 370, 303X or 4300 mainframe. It is not possible to write 8100 programs on a 370-type host.

In the original version, it would have been necessary to go through intermediate compilation and link-edit routines before testing the Cobol source.

Two program products are offered for the system, which is called DMS/DPPX, DPPX being the native mode 8100 operating system.

DMS/Test Function is used for program development and testing, and only one copy will normally be needed. DMS/Execution Facility is an interpreter for DMS and will be needed at each site where DMS programs are to be run.

The latter allows programs to be run either in batch under the base DPPX operating system, or interactively using the DPPX/DTMS database system, where all the facilities of DTMS can be accessed and programs can communicate with CICS/VS and IMS/VS on the host.

## IBM users are target for comms monitor

IBM users are the target for a communications monitoring system introduced by Tadata called RM 200, which can provide real time information on factors like response times and polling delays for up to 32 lines.

The RM 200 costs about £30,000 and is a development of

the MS 109 data communications resource management system announced by Tadata last year (CW, November 8, 1979). The most significant difference is that the RM 200 can be used by itself while the MS 109 has to be added to an existing Tadata advanced measure-

ment system, bringing the total cost to over £100,000.

The main role of an AMS is to monitor the overall performance of the host mainframe and peripherals.

The RM 200 can monitor lines using the bi-synchronous SDLC

protocols. It can be mounted in a standard 19-inch rack alongside the users' modems.

Tadata expects the RM 200 to widen its customer base of IBM users which, till now, has consisted primarily of bigger 370 and 303X installations.

## Alpha Microsystems gets £350,000 boost from finance group

THE first outside investor in Alpha Microsystems (UK), Technical Development Capital, is putting £350,000 into the company. TDC, part of the ICFE finance group, is buying 25% of the shares and putting up additional working capital.

Alpha Microsystems is the master distributor for Europe for three ranges of large micro-computer systems supplied by Alpha Microsystems of Irvine, California. The systems, which use a 16-bit microprocessor based on Western Digital chip

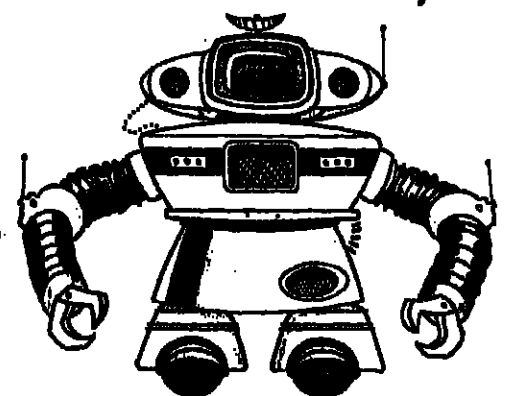
sets, cost between £10,000 and £100,000.

Since February of this year when a recruitment campaign was launched, the dealer network has enlarged to include 18 UK dealers. The company's policy is to give discount to dealers

dependent on the level of front-end support offered.

To expand Alpha Microsystems' share of the business market Leslie Burton, managing director, has long term plans to move into electronic office systems.

The day computer operators look like this,



you won't need Dataskil's Operations Services

Computer operations staff are, as yet, only human. They can only work so fast. They go on holidays, fall ill or maybe leave. Dataskil Staff Services can fill the gaps, advise on recruitment and provide practical guidance at all levels.

Dataskil's experienced staff bring you speedy relief and stay only as long as you need. If you're in the throes of adopting new equipment, their helping hands ensure a smooth transition.

Meanwhile, there's time to recruit and train your staff properly, and here you can draw on our experience in the job market to find the right people.

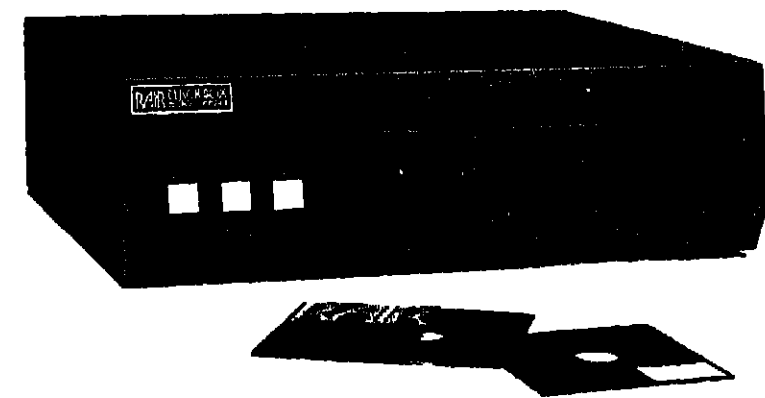
Staff Services will also help to increase your operations staff efficiency. If you opt for on-site, practical guidance, they'll soon be up to the high standards set by Dataskil.

Staff Services are part of a total Operations Service from Dataskil which includes Management, Consultancy and Procedures. Dataskil is unrivalled in providing such a complete service and it's available to anyone with a computer.

For more details contact, quoting ref. CW6419: South & West Andy Woodham, Tel: Reading (0734) 581258. Dataskil Limited, Reading Bridge House, Reading, Berkshire RG1 8PN. Midlands & North John Bright, Tel: Wilmslow (0825) 532631. Dataskil Limited, St Ann's House, Alderley Rd., Wilmslow, Cheshire SK9 1HG.

**Dataskil Ltd**  
The Computer Professionals

# The microcomputer that thinks it's a mainframe



**RAIR Black Box**

You probably don't need convincing that micro-computers make sense, both functionally and economically. However if you're a serious computer user you want the same levels of performance, flexibility and reliability you've had (we hope) from your mainframe systems. It was to meet these goals that we designed our Black Box Microcomputer.

Using proven state-of-the-art technology we packaged our 8085A microprocessor with 64 K bytes of RAM memory, two high capacity minidisk drives, programmable I/O interfaces, Real-Time Clock, etc. into a compact desk-top system ideally suited to a wide range of microcomputer applications.

We also made sure that our

system could grow with your applications. You can connect up to 16 separate terminals and peripherals, and operate them simultaneously, and for large database applications you can add our new Hard Disk

To: RAIR Limited, 30-32 Neal Street, London WC2A 9PS. Telephone 01-834 4663. ☐ Please send literature. ☐ Please telephone. Name: \_\_\_\_\_ Position: \_\_\_\_\_ Company: \_\_\_\_\_ Address: \_\_\_\_\_ Tel: \_\_\_\_\_ Ext: \_\_\_\_\_

**RAIR**

subsystem giving up to 80 M bytes of on-line storage, all fully supported by our enhanced disk operating system.

But of course a microcomputer is only as good as its software. Our software catalogue includes BASIC Compiler and Interpreter; FORTRAN IV and COBOL 74 Compilers, Sort/Merge, Database, Communications, Word Processing packages, Scientific and Commercial Applications, etc.

Most important, the Black Box has a proven track record, and is supported by a U.K. wide maintenance service.

Oh we nearly forgot! The price of the Black Box starts at just over £2000, so if you're thinking about micros, we'd like to hear from you.

## DIGICO COMPUTERS

the best commercial system?

For 14 years DIGICO have been designing systems for successful people. Total range compatibility means that your systems will always grow with you. Your original investment in even the smallest "micro" system can expand to a large mainframe without any obsolescence. This will give you security, power and total flexibility into the foreseeable future. Over 1000 installations across all 5 continents cover applications such as:

- |                                                            |                                                  |
|------------------------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Comprehensive accounting packages | <input type="checkbox"/> Passenger flow analysis |
| <input type="checkbox"/> Production Control                | <input type="checkbox"/> Mining systems          |
| <input type="checkbox"/> News information                  | <input type="checkbox"/> Hospital administration |
| <input type="checkbox"/> Banking                           | <input type="checkbox"/> Patient Records         |
| <input type="checkbox"/> Hotel administration              | <input type="checkbox"/> Typewriting             |
| <input type="checkbox"/> Car park control                  | <input type="checkbox"/> Security systems        |
| <input type="checkbox"/> Service bureau                    | <input type="checkbox"/> Newspaper distribution  |
| <input type="checkbox"/> Insurance working                 | <input type="checkbox"/> Legal accounting        |

start small and grow large with digico

Tick any of the above and we'll send you a dealer on the installation for a trial. Or alternatively send for our brochure entitled "Let the users speak for themselves" and find all about other people's success — then let DIGICO help you with yours!

Digico Limited, 100 Broad Street, London EC2A 4DP. Telephone: 01-479 0021. Telex: 55505. Northern Area Office: 100 Broad Street, London EC2A 4DP. Telephone: 01-479 0021. Telex: 55505.





## The Terak 8510/a from Dicoll.

### A TURN FOR THE BETTER

The Terak 8510/a was built to bring graphics to life. This unique, completely self-contained, stand alone, desk top graphics computer gives you an animation capability that, until now, could only be obtained with a larger, more expensive system.

The Terak 8510/a is a powerful 16-bit microcomputer, allowing effective animation, making it ideal for design, simulation, and modelling. And an independently controlled 4K read/write memory allows the creation of an unlimited number of character sets. This, coupled with the dual ported main memory, allows the

8510/a to simultaneously display animated graphics and text. What's more, Terak supports U.C.S.D., PASCAL, DEC RT-11, BASIC and FORTRAN IV software.

So if you want to make the most of your ideas, put them in motion with a Terak 8510/a!

**Colour Graphics**  
We also offer two colour display systems AED 518, offering 886 simultaneous colour imaging and full dot addressable graphics capability, 512 x 512 resolution. VTV80 DEC Colour Mimic display system completes the Dicoll range of computer graphic systems.

**DICOLL**  
BASINGSTOKE

Dicoll Electronics Ltd., Broad Close, Kingsford Estate, Basingstoke, Hampshire. Telephone: Basingstoke (0886) 51551 Telex: 886703

Looking at it another way,  
a winner from every point  
of view.

## SOFTWARE FILE

### 4300 launch blamed for ADR's low profits

THE announcement of IBM's 4300 series is thought to be behind profit described as "disappointing" at the huge US software products company Applied Data Research. Profit was down from \$1.98 million in 1978 to \$524,657. Turnover was said to be on target for the year at \$28.7 million, a 27% increase on the 1978 figures.

Applied Data Research is best known for Librarian and other systems products for large IBM users. It is thought to have suffered a setback when potential users hung back on product purchases following the 4300 announcements. A lot of its efforts last year were put into building for the future.

According to the president, John Bennett, such start-up efforts and heavy investments in research and development were primarily responsible for results "well below expectations".

The Datacom product line in particular did not do well in its first full year with ADR but is

expected to improve now that it is fully integrated with other software products.

The company's software products division is said to be doing well following the acquisition from the UK software company CAP-CP of its five European subsidiaries (CW, March 29, 1979).

### Bank picks Datamanager

THE Hong Kong and Shanghai Banking Corp. one of the largest banks in Asia, is to use the MSP product Datamanager to control its data resources. The system was chosen because of the range of DBMSs with which it interfaces and its ease of use.

MSP plans further visits to Hong Kong in this month to foster interest in Datamanager among a dozen of the 20 or so IBM 360/370 users there.

### Portable Socrate?

A MAJOR development programme to produce a portable version of the French Socrate database management system has been launched by ECA Automation, a member of the Thomson Informesque group of companies.

The Ministries of Industry and Defence are backing the project, which involves developing a portable subset of the database, to be available in October, and

versions specialised to particular machines.

Version 1.7 for the Honeywell Level 66 line is due in October 1980, version 1.8 for the S880 Mitra mini in July 1981, a version 1.7 for the CII-HB Level 84 and DPS 7 in July 1981 and a version 1.7 for the Honeywell Level 6 mini in December 1981. IBM and SEMS Solar versions are also planned. There are currently 120 Socrate users in France.

## Tandem Nonstop mini catches Mumps

MUMPS, the high level language used for data management has been made available by Tandem, the manufacturer of the multiprocessor minicomputer Nonstop. Mumps has been increasing in popularity for the manipulation and sharing of data.

Mumps arose from Massachusetts General Hospital's multiprogramming system, which met a need for a language which could manipulate text strings with a file management system in an interactive time-shared environment.

It is mostly used in dialogues between the user and the computer in which data is displayed and collected. The system validates data entries, checking on format, length and numerical size and requesting corrections where errors occur.

The Tandem Mumps supports all features of the 1977 Ansi standard for the language, but runs under Tandem's own Guardian operating system and Enscribe file system, thus allowing users to execute Cobol, Fortran, and TAL programs concurrently.

### MP/OS op system on Nova 4

DATA General has put its multi-tasking MP/OS operating system on the Nova 4, which previously only supported the real time disc operating system, RDOS. MP/OS was originally available only on the 16-bit Micronova microcomputer.

MP/OS also supports Pascal on the Micronova and Nova, and Data General says that the language has been enhanced for multi-tasking operations such as process control, real time data capture and laboratory operations.

The MP/OS system is compatible with the AOS operating system used on Data General's range of scientific and commercial Eclispae systems, which allows upware compatibility across a wide range. MP/OS is said to improve performance and capacity by eliminating multiple seeks.

Pascal also extends across the whole Data General range, and has been implemented to simplify program development and allow multi-tasking.

## Computer Board backs Microsim

CONSULTANCY Pactel and software house DM England have entered the lucrative educational market with a sale to over 50 outlets of their joint product, the Microsim microprocessor development system, through the Computer Board for Universities and Research Councils.

The decision was taken on the advice of the board's software provision committee, which confirmed a high level of interest in the product among heads of computer departments following a mail shot to 60 universities after several inquiries from individual faculties.

There were several firm orders even before the board undertook to fund the bulk purchase at a discount cost of over £1,200 per university.

Microsim is a software package biased towards development projects, using the standard assembly language for the chosen microprocessor.

Its developers refer to it as an "inter-assembler" since it combines an assembler, interpreter, simulator and link loader in such a way as to make them invisible to the development programmer.

The assembly code is accepted and analysed line by line, and errors detected immediately with explicit and comprehensive error messages. The text is ready to run as soon as it is entered.

Microsim also distinguishes between data storage and instructions, and stops any illegal actions when the program is run, displaying explanatory warnings. Linking is also achieved "invisibly", and immediately.

The package is written in Fortran IV and versions exist for the Intel 8080/85, Zilog Z80 and RCA Cosmac chips. In response to firm orders and interest from Intel, others are under way for the Intel 8086, the Motorola 6800 and the MOS Technology 6502, as used in the Apple and Com-

### Multi-user Cobol compiler

A MULTI-user Cobol compiler has been introduced by Ryan McFarland for Texas Instruments' DS990 Model 1 and Model 2 business computer systems. The package, RMI COS 990, is designed for development, compilation and execution of Cobol business applications.

Over 60K-bytes are available for user programs in a 64K-byte system and the RMI COS990 Cobol is source-compatible with TI's DX10 Cobol. The product also features a job description language and includes a cross compiler and conversion utilities that operate on the DX10.

## Artificial Intelligence boost from RTL/2

AN RTL/2 compiler for the ICL 2800 has been developed by systems house SPL in conjunction with ICL Datasilk. As a result, the artificial intelligence laboratory at Queen Mary College, London, has already acquired an RTL/2 compiler for its ICL 2880.

The college has been involved in robotics for some years (CW, March 29, 1979) and has been using RTL/2 on its Digital Equipment PDP-11 under Unix and the multi tasking system developed by ICL. RTL/2 was fixed upon as a standard language for projects in the laboratory two years ago, for its portability and ease of use.

The language is to be used in projects including the development of picture processing software and the control of mobile robots and telemanipulators. QMC will also use SPL's cross compilation facilities.

The laboratory was also involved in the re-writing of the

multi-tasking system to reduce machine code and make it machine independent. The result, standard multi tasker, is largely written in RTL/2 and allows more rapid production of robot control software. Combined with SMT, it enables programs to be transferred easily to new and powerful micros.

Both SMT and MTS are marketed by SPL, which has recently entered the robotics field with the newly formed British Robotic Systems (Software File, March 6).

### Geosystems in US

THE UK-based database producer and information management consultancy Geosystems has opened a North American office in Cambridge, Massachusetts. Geosystems offers an online bibliographical database, Geosearch, via the Lockheed Dialog Information service.

## hoskyns 4341 services for the IBM user — batch and on-line —

VM — access to your own virtual machine

DOS/VS, DOS/VSE, POWER, — Remote job entry

CMS — for program development, program maintenance and general problem solving

CICS — on line interactive capability

DATABASE — DL1, TOTAL etc...

SOFTWARE — COBOL, PL1, BAL, FORTRAN, APL etc...

use us before you install to:  
— evaluate performance — assess suitability — confirm benefits — determine hardware/software options

use us instead of installing to:  
— improve cost effectiveness — obtain system flexibility — overcome staffing problems — have access to a wide range of skills and resources — avoid hardware up grade or replacement

use us for Conversion projects, Applications development, Back-up, Overloads.

use us to provide systems support to ensure success.

Spend your 'time' with us.

\* Contact us NOW  
TELEPHONE TONY RUSSELL  
01-831-6781/6811  
91-93, FARRINGTON ROAD  
LONDON EC1M 3LB

HOSKYN'S GROUP LIMITED is a subsidiary of MARTIN MARIETTA DATA SYSTEMS INC. operating worldwide and with a network of offices and data centres in the UK.

## Take some professional advice.

Verbatim flexible discs and tape cartridges are used and recommended by computer professionals world wide. A full development programme in association with leading manufacturers ensures top quality and we provide unrivalled price and availability. For the full range of magnetic media from Willis see our catalogue.

Phone Bishops Stortford (0279) 506491 or send coupon.

## WILLIS Computer Supplies, for people who know better.

To: Willis Computer Supplies Ltd., P.O. Box 10, Southmill Road, Bishops Stortford, Herts CM23 3DN.

Please tell me more: — Flexible discs ☐ Mini discs ☐  
Cassettes ☐ Cartridges ☐ Catalogue ☐

Name \_\_\_\_\_

Company Address \_\_\_\_\_

## LIMITED OFFER PRICE REDUCTIONS

Tally 1612 KSR £1500.00  
Tally 1612 RO £1450.00  
Mannesmann  
M80/77 RO From £750.00  
Perkin Elmer  
Bantam 550 VDU £490.00  
TX 80 Matrix Printer £450.00

Westrex Company Limited  
162 Coles Green Road, London NW2 7HE  
Telephone: 01-462 5401 Telex 823003

Westrex  
Liton



# OP SPOT



Practical hands-on training is a vital part of any course in operations. For John Gregor (standing) and John Thompson, Threshold students at St Helena College of Technology, such training is provided on St Helena Borough Council's ICL 19027.

## What are you looking for — money or promotion?

WHAT do you, as members of the operations fraternity, consider to be the more important factors — a good salary and security, or the chance of promotion either inside or outside the operations department?

I put this question on behalf of a senior operator who is quite satisfied with his salary and conditions of employment, but would like to know how his "lot" compares with that of other operations staff.

He writes, "My salary and shift allowance come to about £5,800 per annum. However, with overtime I expect to gross in excess of £8,000 this fiscal year."

"I also get other benefits, including a non-contributory pension, cheap mortgage and

Week 1	Monday days, Tuesday days, Wednesday nights
Week 2	Thursday days, Friday days, Tuesday nights, Friday nights.
Week 3	Monday nights, Wednesday days, Thursday nights, Friday nights.
Week 4	Monday days, Tuesday days, Wednesday nights, Friday nights.

The operators work five additional days over a three-month period.

Figure 1

luncheon voucher worth 40p a day."

Our friend is also happy with the site's twelve-hour shift system (see Figure 1) and having to "come in five other days in every three months in order to make up the required 121 hours per month."

On the other hand, he has little chance of promotion despite having considerable skill and experience.

"I have worked in operations for almost seven years. In that

time I've worked on IBM 370/148s, 370/158s and an IBM 3033, under OS, OS/VS1 and MVS."

He modestly describes his ICL experience as "reasonable but not outstanding," and says that at his installation the operators are "openly discouraged" from applying for positions in programming.

"Positions such as JCL writing, operations support, technical support and TP support are not taken up by the operators. Even our operations manager didn't come up through operations."

"We have just one shift leader and a deputy shift leader on each team. And during my time at the installation there has been just one promotion to shift leader and none to higher positions."

I suppose it all depends on the sort of person you are and what you want out of life. At the larger installation, like our friend's, the operators are expected to wait a long time for

promotion out of the computer room and off shift work.

Management may well argue that technical expertise is needed online, and that's fair enough providing the operators are extended and their skills put to full use.

But at this correspondent's installation there are operations and technical support sections, which implies that the operators call in support staff rather than sorting out problems themselves.

Consider his operations experience: seven years on large IBM mainframe running under various OS operating systems. Such experience could, depending on the operator's inclination and aptitudes, be put to good use in such areas as technical support, applications support, systems programming, operator training, or in certain supervisory positions.

Any operator who can earn £8,000 a year isn't doing too badly. That does, however, include a shift allowance and a certain amount of overtime.

The benefits he gets are good by most standards. Personally I don't like cheap mortgage schemes, as they tie the operator to the company and restrict his freedom of choice to a certain extent.

## Adding to skills

IT'S good to hear about operators who are interested in adding to their skills and expertise. More than 60 such operators have bought copies of the George 2 Anthology of Presentations, so George 2 User Group chairman Ron Linton tells me.

A collection of lectures, hints and tips presented at group meetings in recent years, the anthology costs £1.50 per copy. Cheques should be made payable to the George 2 User Group, and copies are available from Ron Linton, Manchester Polytechnic Computing Services, John Dalton Building, Chester Street, Manchester M1 5GD.

## Do married over-35s make better operators?

COMPUTER operations was the subject of discussion at a meeting of the Harlow branch of the British Computer Society the other week.

Those present included a systems programmer, an operations manager, a manager from the paper manufacturing industry and a teacher. But surprise, surprise — there were no operators in attendance.

Anyway, in your absence, we discussed all sorts of matters relating to operations, including training, careers and shift work.

The man from the paper industry came up with some particularly interesting comments.

He pointed out that when you take on lots of young and ambitious operators many will not be able to get the promotions they want, and will therefore become unhappy and disillusioned.

The computer industry might, he suggested, do better to recruit married men of 35 years and over as operators. Such persons are employed on permanent night shift in the paper industry, and a very fine job they do, too, he added.

What do you think of that? I am particularly interested in hearing from operators who are over the age of 35. Why haven't you moved out of the computer room and how does shift work affect you?

## Puzzler

FIFTEEN counters are grouped 3-3-3 at one end of a 15 cell line, and 3-3 at the other, with 10 empty cells between. The problem is to reach a one-counter-to-one-cell state in ten moves. Each move must consist of picking up a counter, passing it in one direction left or right, and finishing at an empty cell. One good "try" is 16-12, 16-13, 2-11, 14-9, 14-10, 2-8, 2-7, 1-6, 1-5... but then the call 3 situation cannot be resolved. See page 29 for solution.

## Insight

The financial planning and modelling system for the IBA system 2400. IBA 2400. See page 29 for solution.

by Bernard Allen

## Tote puts its shirt on ME29 power

THE first organisation to announce an order for the new ICL ME29 is the Horserace Totalisator Board's Tote Computer Services subsidiary. Underlining the power of the new system, the Tote is upgrading from an ICL 1903A, which was taken on rental in 1973 and converted to a sale in 1977 at a total cost of nearly £300,000.

The ME29 configuration will cost substantially less: about £160,000 for a 1-megabyte processor with 500 megabytes on disc, two 8-track tape units and a 1,100 lpm printer.

"We're sixth on the list and we expect to get the machine between September and November. As an early customer we are getting special attention from ICL: they are putting in a project team," TCS general manager Mike Brooks told Computer Weekly.

"TME appears to be based on the EMOE executive with much improved communications bolted on and, as I understand it, conversion from 1900 is about the same as moving from a 1900 to a 2903: you just need to recompile. We will be going to TP in the long term. We are taking Prosper, Cobol, RPG and Plan and we are very pleased with the machine."

"I think it is the best bit of kit ICL has brought out in a very long time. We will be advertising for staff, but we've had inquiries already from people who want to work on the ME29."

## ICL France aims for 100 orders by September

ICL France is hoping to have installed 100 ME29s by the time it closes its books on the current financial year at the end of September.

The French Press has hailed the ME29 as the beginning of ICL's "E" series, the E series being the IBM line which emerged as the 4300.

"The ME29 is pitched at a very crowded market place which includes the IBM 4300 and System 38 and the CII-HL Level 64. One ICL representative has identified 23 competitors," says Ordinateurs.

"But the orientation towards transaction processing, teleprocessing and office automation is much stronger than that of other machines."

"At first sight, the ME29 is original, unquestionably more so than the System 38, which has still not fulfilled its promise. The inclusion of a Transpac interface, video circuits for standard

## Bargain sales pave the way to new IBM 3850

THE IBM announcement of very cheap extension frames for the 3850 mass storage system (CW, March 20) is an attempt by IBM to sell off its stocks of existing 3850 kit before introducing a new 3850 with twice the storage density.

This is the view of Bob Fertig, president of the technology analysis group at Advanced Computer Techniques of New York. According to Fertig the new 3850 will employ the same honeycomb of cartridges and

the same reading mechanism as the existing system but it will read and write data at twice the density.

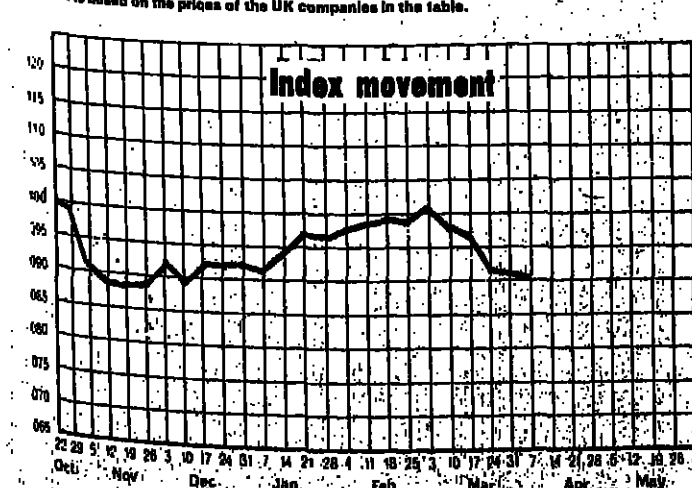
Another feature will be the use of the 3880 disc controller and 3370 drive as the disc staging system.

Fertig has also predicted that IBM will introduce a floppy disc stack system with a maximum capacity of 4,000 megabytes. It is known as Prospector within IBM.

## CW SHARES TABLE

Price	London Stock Exchange	Price	Change	New York Stock Exchange	Price	Change
1000	1000	1000	1000	1000	1000	1000
1001	1001	1001	1001	1001	1001	1001
1002	1002	1002	1002	1002	1002	1002
1003	1003	1003	1003	1003	1003	1003
1004	1004	1004	1004	1004	1004	1004
1005	1005	1005	1005	1005	1005	1005
1006	1006	1006	1006	1006	1006	1006
1007	1007	1007	1007	1007	1007	1007
1008	1008	1008	1008	1008	1008	1008
1009	1009	1009	1009	1009	1009	1009
1010	1010	1010	1010	1010	1010	1010
1011	1011	1011	1011	1011	1011	1011
1012	1012	1012	1012	1012	1012	1012
1013	1013	1013	1013	1013	1013	1013
1014	1014	1014	1014	1014	1014	1014
1015	1015	1015	1015	1015	1015	1015
1016	1016	1016	1016	1016	1016	1016
1017	1017	1017	1017	1017	1017	1017
1018	1018	1018	1018	1018	1018	1018
1019	1019	1019	1019	1019	1019	1019
1020	1020	1020	1020	1020	1020	1020
1021	1021	1021	1021	1021	1021	1021
1022	1022	1022	1022	1022	1022	1022
1023	1023	1023	1023	1023	1023	1023
1024	1024	1024	1024	1024	1024	1024
1025	1025	1025	1025	1025	1025	1025
1026	1026	1026	1026	1026	1026	1026
1027	1027	1027	1027	1027	1027	1027
1028	1028	1028	1028	1028	1028	1028
1029	1029	1029	1029	1029	1029	1029
1030	1030	1030	1030	1030	1030	1030
1031	1031	1031	1031	1031	1031	1031
1032	1032	1032	1032	1032	1032	1032
1033	1033	1033	1033	1033	1033	1033
1034	1034	1034	1034	1034	1034	1034
1035	1035	1035	1035	1035	1035	1035
1036	1036	1036	1036	1036	1036	1036
1037	1037	1037	1037	1037	1037	1037
1038	1038	1038	1038	1038	1038	1038
1039	1039	1039	1039	1039	1039	1039
1040	1040	1040	1040	1040	1040	1040
1041	1041	1041	1041	1041	1041	1041
1042	1042	1042	1042	1042	1042	1042
1043	1043	1043	1043	1043	1043	1043
1044	1044	1044	1044	1044	1044	1044
1045	1045	1045	1045	1045	1045	1045
1046	1046	1046	1046	1046	1046	1046
1047	1047	1047	1047	1047	1047	1047
1048	1048	1048	1048	1048	1048	1048
1049	1049	1049	1049	1049	1049	1049
1050	1050	1050	1050	1050	1050	1050
1051	1051	1051	1051	1051	1051	1051
1052	1052	1052	1052	1052	1052	1052
1053	1053	1053	1053	1053	1053	1053
1054	1054	1054	1054	1054	1054	1054
1055	1055	1055	1055	1055	1055	1055
1056	1056	1056	1056	1056	1056	1056
1057	1057	1057	1057	1057	1057	1057
1058	1058	1058	1058	1058	1058	1058
1059	1059	1059	1059	1059	1059	1059
1060	1060	1060	1060	1060	1060	1060
1061	1061	1061	1061	1061	1061	1061
1062	1062	1062	1062	1062	1062	1062
1063	1063	1063	1063	1063	1063	1063
1064	1064	1064	1064	1064	1064	1064
1065	1065	1065	1065	1065	1065	1065
1066	1066	1066	1066	1066	1066	1066
1067	1067	1067	1067	1067	1067	1067
1068	1068	1068	1068	1068	1068	1068
1069	1069	1069	1069	1069	1069	1069
1070	1070	1070	1070	1070	1070	1070
1071	1071	1071	1071	1071	1071	1071
1072	1072	1072	1072	1072	1072	1072
1073	1073	1073	1073	1073	1073	1073
1074	1074	1074	1074	1074	1074	1074
1075	1075	1075	1075	1075	1075	1075
1076	1076	1076	1076	1076	1076	1076
1077	1077	1077	1077	1077	1077	1077
1078	1078	1078	1078	1078	1078	1078
1079	1079	1079	1079	1079	1079	1079
1080	1080	1080	1080	1080	1080	1080
1081	1081	1081	1081	1081	1081	1081
1082	1082	1082	1082	1082	1082	1082
1083	1083	1083	1083	1083	1083	1083
1084	1084	1084	1084	1084	1084	1084
1085	1085	1085	1085	1085	1085	1085
1086	1086	1086	1086	1086	1086	1086
1087	1087	1087	1087	1087	1087	1087
1088	1088	1088	1088	1088	1088	1088
1089	1089	1089	1089	1089	1089	1089
1090	1090	1090	1090	1090	1090	1090
1091	1091	1091	1091	1091	1091	1091
1092	1092	1092	1092	1092	1092	1092
1093	1093	1093	1093	1093	1093	1093
1094	1094	1094	1094	1094	1094	1094
1095	1095	1095	1095	1095	1095	1095
1096	1096	1096	1096	1096	1096	1096
1097	1097	1097	1097	1097	1097	1097
1098	1098	1098	1098	1098	1098	1098
1099	1099	1099	1099	1099	1099	1099
1100	1100	1100	1100	1100	1100	1100

The table shows the closing prices in London and New York on Tuesday, 1/4/80. The share index is based on the prices of the UK companies in the table.



## System flowing with honey



IF readers think that the person in our picture (left) clad in protective gear is consulting a computer printout, they are right. They would also be right in thinking that the unusual looking structure in the foreground is a beehive.

The link between the two is a production control system for aparies developed by a bureau at Limerick, Ireland, called Gaeldata. The system is based on the Series 21/40 distributed computing system from MDS and the first installation is at Mil an Tsulaín, an organisation which maintains over 600 hives at several aparies spread over the west coast of Ireland.

Software developed by Gaeldata includes an input vetting program in the MDS language Mobol which checks the 100-plus variables that can be entered for updating the master record maintained for each hive.

The printout produced each day says which hives should be inspected and what diet should be applied. Gaeldata has also developed statistical programs for aiding long-term breeding.

The 21/40 at Mil an Tsulaín includes 64K-bytes of main memory, three floppy disc drives, an MDS 2141 printer and one video terminal.

The name, Mil an Tsulaín, incidentally, is nothing more mysterious than the Gaelic for honeybees.



## PEOPLE and EVENTS

## Solving the FA's problems

THE administrative and accounting problems of the Football Association are to be solved by a Kienzle K2000 computer. The governing body of football clubs and organisations all international fixtures in England, as well as the FA Cup.

In our picture FA chief accountant Paul Masters examines the new computer with Maria Dal Nave, computer operator. The K2000 is to handle a number of applications, the main one being an integrated purchase, sales and nominal ledger system.

David Garnsey, until recently a director with John Goldsmith Computer Recruitment, has now established his own recruitment business in Epsom, Surrey. To be known as Index Systems, the company will specialise in contract support staff for the UK and overseas.



## 'Outstanding merit' in telecoms engineering

TWO top telecoms men at the Post Office have been elected Fellows of the prestigious Fellowship of Engineering. They are John Whyte, deputy managing director of telecommunications, and Roy Harris, director of systems evolution and standards.

Whyte began his career at the PO radio research labs at Dollis Hill. In the 1980s he was seconded to the Treasury where he headed a drive to encourage the use of computers by government departments.

More recently he was responsible for the plan to replace

Jerry Lipman, Ko-Ree-Type's European managing director, has left the company to start his own import and export business.

Robert Watkins is the new chairman of the board of Electronic Conventions. Watkins, of Raytheon Company, succeeds Jack Logan, who remains on the board.

Britain's electromechanical telephone equipment with electronic equipment, and in 1976 was awarded the CBE for his work in promoting British telecoms exports.

Roy Harris has been involved with electronic switching since the early days of research in this field and was the originator of the System X family of advanced switching systems.

The Fellowship of Engineers consists of chartered engineers who are considered, by virtue of their achievements in the field, to be "of outstanding merit."

Ripley Pedro has been appointed technical manager with Lion Micro Computers. He joined the company from Laszky's where he was top technical consultant.

Stanley Ward has become operation services manager with the British Road Services group. He will be responsible for design development and management of computer and communications support systems in the group. He joined BRS just over a year ago.

Stephen Forte has been appointed managing director of American Microsystems Europe. He will be responsible for AMI sales throughout Europe, Africa and the Middle East. He was previously with General Electric Microelectronics where he held the positions of managing director and vice-president of marketing.

Derek Farmer has become product manager for ITT Business Systems 3800 series. He joined ITT Cried in 1984 as a management trainee and was group planning and DP operations manager with the management services division prior to his current appointment.

Mark Taylor and Paul Sellar have both joined Alacra as technical salesmen. Both have recently graduated.

## DIARY

APRIL 16 Communications user forum. BCS Data Communications Specialist group. Grand Hotel, Birmingham. 08.30.

APRIL 15-17 IBM CUA forum. The Royal Bath Hotel, Bournemouth. Tel 01-551 1843.

APRIL 18 Should we be using word processing? London Chamber of Commerce and Industry, Cannon Street, London. 14.15.

Has the DPM a future role? and AGM: IDPM Central London branch. Pearl and Dean Studios, London. 18.00.

AGM: IDPM East Midlands branch. Derby College of Technology, Wilmore, Derby. 19.30.

APRIL 23 The European Commission's Systan machine translation system. BCS Natural Language Translation Group. King's College, London. 18.00.

Towards a branch-and-bound algorithm for the one dimensional trim problem. BCS Mathematical Programming Study Group. London School of Economics, London. 18.30.

APRIL 23-24 The applications of process computers in the oil and gas industries. BCS Process control specialist group. Waldorf Hotel, London. 10.00.

APRIL 25 Participative design — a constructive appraisal. BCS Human Aspects of Computer Usage Specialist group. Bloomsbury Centre Hotel, London. 08.00.

APRIL 30-MAY 1 IBM CUA Series 1 group. IBM Havant and Royal Beach Hotel, Southsea. Tel 01-551 1943.

MAY 21 Interactive programming in Cobol on the IBM 3100. BCS Cobol Specialist Group. Polytechnic of Central London, London. 14.15.



Whyte Harris

Tony Legg has been appointed client services manager at Quantime. He formerly held a similar position with Libra Computing.

Henry Tinker has joined Cipher Data Products as vice-president of operations. He was previously with Qume where he was vice-president of manufacturing.

Stanley Silverman has become director of market planning, a new position with Ampex. He was formerly with Diablo Systems, where he was manager of product marketing.

Ash Upadhyaya has become European software support manager with Sentinel Computers Europe. He used to work for Philips as a senior systems analyst and has just returned from 18 months in Canada.

Peter Carroll has joined CMC's technical support division in pre- and post-sales support. He joined the company after three years with British Leyland where he was a senior programmer.

Bill Hamblin and Paul Raubusch have both become sales executives with Versatec. Hamblin joins from SE Labs and Raubusch from Laser-Scan.

Graham Matheson has become sales manager for Software Architects. He was previously a senior consultant with Seicom.

## Liveness File

by Dan

WHAT IS ASSEMBLY LANGUAGE? EASY.



... IT'S A DIALECT SOMEWHERE BETWEEN MACHINE CODE ...



... AND HIGH-LEVEL GOBBLEDEGOOK ...



... MICRO KIT CONSTRUCTION MANUALS ARE WRITTEN IN ...



## MICRO NEWS

## Mainframe makers in personal market

GROWTH of the personal computer market over the next five years is likely to be rapid enough to entice mainframe manufacturers to enter the business (CW, January 3).

According to Thomas Burns, senior management consultant at SRI International, the market is expected to grow at a rate of 80% annually for the period 1980 to 1985. "By 1980, hardware expenditures in the field may exceed \$2 billion a year," says Burns.

This has caused SRI International, the Croydon-based business research and consultancy firm, to undertake an eight-month multi-client study into the growth and characteristics of the US personal computer market over the next five years. The study is directed at mainframe computer and electronics manufacturers in Europe.

SRI has realised a need for management of businesses either already in, or planning to enter the personal computer industry, including manufacturers, suppliers, retailers and distributors. Clients have specifically asked for a broad and in-depth study of the current and projected markets for personal computers.

Entitled Personal Computers: Strategies for Success, the study is designed to help management plan its product line and identify future opportunities in the personal computer market. SRI considers that up to now management has had difficulty in keeping up to date with the market, technical innovations and customer preferences.

## 9900 second source

A MOVE aimed at taking ITT Semiconductors into the high performance 16-bit microprocessor market is the winning by Intelmetall, the company's world-wide semiconductor operation based in West Germany, of the second-sourcing rights to Texas Instruments' 1600 MOS family.

Apart from the TMS9900 4Mhz 16-bit microprocessor, the family includes the TMS9940 single chip 16-bit microcomputer and the 9980A and 9981 microprocessors with 8-bit memory data buses.

The two-way agreement means that TI can produce in

return ITT's series of advanced consumer and automotive integrated circuits in CMOS, PMOS and bipolar technologies.

## Compelec support

SUPPORT for the Compelec microcomputer systems is to be provided by DDT Maintenance of Borehamwood, official service agent to Logitek. This arrangement has been set up by Logitek, the exclusive UK and Eire distributor of Altos devices, around which the Compelec systems are configured, to fill the gap left by the liquidation of Compelec.

## REMEMBER



for

## MEMORY

IBM 370/303X Add-On Memory and Features

Contact Mike Harper (01) 222 4031

O.P.M. LEASING SERVICES (U.K.) LTD.  
7 Storey's Gate, London SW1

by Eileen Stainer

## Univac to produce custom-built VLSI

IN the new semiconductor division Univac is planning to establish at its existing site in Eagan, Minnesota (CW, March 20), the company will be using a \$50 million investment to develop and manufacture specialist VLSI circuits.

Existing development of subnanosecond ECL and CMOS gate arrays for both commercial and military sides of Univac's business will be carried out on a much larger scale, with the bipolar and MOS laboratory becoming part of the new division.

Responsibilities of the division will include the process, development and fabrication of the company's custom designed semiconductors and any circuits required, in low-volume quantities only. The company stresses that it will not be producing standard components such as logic circuits, microprocessors and memory devices, which are available from external sources.

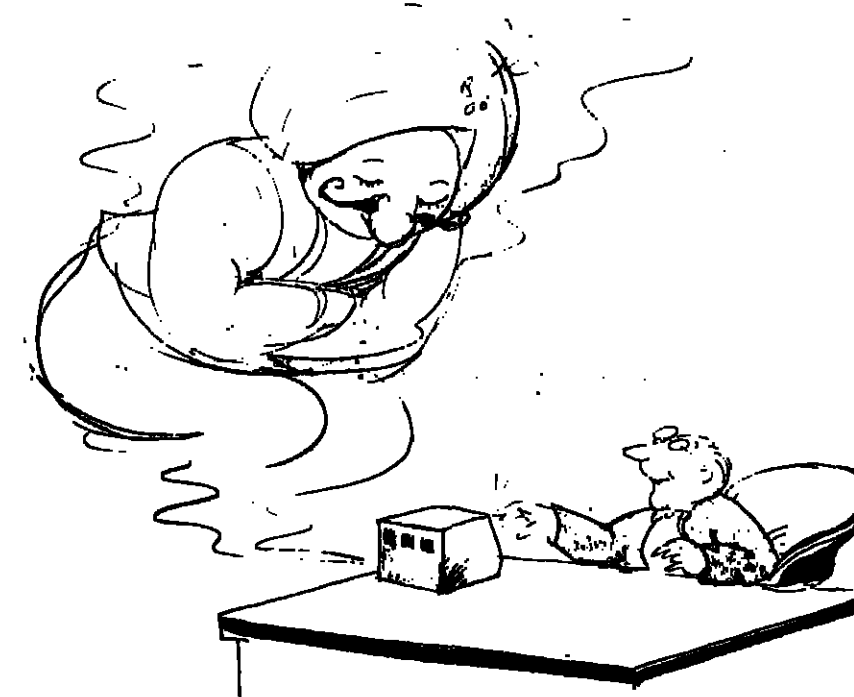
Included in the capital expansion plan is the construction of a new 145,000-square-foot facility at the existing 214-acre Univac Park office and laboratory complex in Eagan. The centre is due to be ready by 1982 and Univac expects that staff requirements will exceed 300.

Initially the new division will be using direct step-on-wafer manufacturing processes to allow design down to dimensions of two microns or less. However, installation of E-beam equipment is planned at a later date to achieve dimensions of one micron or less.

Univac expects to have devices produced by the new division appearing in about three years' time. This estimate depends on start-up problems being kept to a minimum using the latest photolithography equipment, computer controlled diffusion tubes and ion implanters.



This week EILEEN STAINER takes over as Micro News editor, having worked as a reporter on Electron for the past 18 months. In 1978 she graduated from Kingston Polytechnic with a sandwich degree in Electrical and Electronic Engineering.



Do you want a computer that says "You called?" or one that says "Drop dead?"

Too many computers control the controller.

They decide when and how you'll use them.

Now Nixdorf are great believers in man and machine. But you notice they put 'man' first? They'll have none of this slave-bullying-the-master nonsense.

So for the last 25 years they've been putting computers where they are most profitable. At man's disposal. Right alongside where he (or she) works. Immediately accessible. Immediately effective. Earning money for their owners in 70,000 different situations around the world.

Nixdorf is a massive £310 million company making, marketing and servicing mini-computers. They are represented in 30 countries, employ 11,000 of the brightest people and have a reputation for making some

of the best equipment and providing the best support services in the business.

With their design philosophy of interlinking modules Nixdorf systems can grow to whatever size you need, and although their software packages are easy to use, they're now acknowledged, paradoxically, as some of the most sophisticated available.

Their COMET package for accountancy, stock control, order processing and invoicing, for example, is the only truly multinational package available.

Add to all that Nixdorf's worldwide servicing network and blue-chip client list and you'll see that anyone looking for an attentive, obedient computer system doesn't have to look far.

Nixdorf. How about making your first command a request for more

information by phoning 01-572 3111, or writing to:

Nixdorf Computers, The Hounslow Centre, 1 Lampton Road, HOUNSLOW, Middlesex TW3 1JB.

Please send me further details on Nixdorf Computers.

Name \_\_\_\_\_

Company \_\_\_\_\_

Position \_\_\_\_\_

Address \_\_\_\_\_

Tel \_\_\_\_\_

NIXDORF  
COMPUTER

## HEALTH WARNING: COBOL OR PL/I CAN SERIOUSLY DAMAGE YOUR HEALTH

This is why a hospital DP department installed EASYTRIEVE with the following result:

"EASYTRIEVE has both reduced our work and increased our productivity. And it's gone along way towards building user confidence in our department. It's not every day you find a product that pays for itself in the first six months. Administrators have been noticeably impressed and they request some pretty hairy reports. Our programmers picked it up in no time."

## WHAT CAN EASYTRIEVE DO?

The main strength is obviously reporting. However, the comprehensive features allow EASYTRIEVE to be used for the vast majority of simple to moderately complex programmes. Development times of 5-15 days with COBOL or PL/I become 1-2 days with EASYTRIEVE.

## HOW EASY IS EASYTRIEVE?

English-like, completely free format allows both DP and end-users to use it effectively within a day.

## PRICE?

From £4,500 for small DOS systems to £10,250 for large OS systems.

## USAGE?

According to Datapro, the most widely used and best rated data management system: 3,000 users worldwide - 150 in the UK.

PANSOPHIC

Pansophic Systems (UK) Limited  
46, Pembroke Road  
London W11 3HN  
Telephone 01 221 1877

Alpha House, Wythenshawe,  
Manchester M22 5RG  
Telephone 061 434 1415

# Appointments

## THE NEWSPAPER COMPUTER PEOPLE RELY ON

# Appointments

## contracts set fair..

USUAL HIGH RATES —  
LONDON COMMUTING AREA

Programmers	IBM OS COBOL
Programmers	IBM CICS/VS - BAL COBOL
Analyst/Programmer	IBM IMS COBOL
Programmers	IBM DOS/VS COBOL
Programmers	IBM System/34 RPG
System Programmer	DEC RSX IAS MACRO11
Programmer	Motorola 6800 Assembler

Telephone Richard Morley on:-

(01) 638-0036

DILOG LIMITED Throgmorton House 15 Cophall Avenue London EC2M 5TP

*professionals seeking professionals*

## SYSTEMS ANALYSTS UP TO £9,000

Development of major projects for expanding ICL Installations in Central and South London

- \* Distributed Processing
- \* Mini-Computers
- \* Database
- \* Communications
- \* Point of Sale Scanning

Against a very competitive market we have strengthened our position as a leader in food retailing. We will maintain this position with an exciting expansion programme that includes opening at least fifty new supermarkets over the next three years.

To provide the company with the control it requires to maintain this growth, major systems are currently being designed. Included is a Distributed Processing System requiring mini-computers being installed in all main depots and Commodity Profit and Stock Accounting Systems. These will be developed at main ICL 2900 installations based near Waterloo and Streatham, South London.

We are seeking Systems Analysts, male or female, with at least three years experience to include design through to implementation of at least one commercial system. Programming experience will be useful but not essential. Your further training and career development will be encouraged.

Our attractive benefits package includes interest-free season ticket loans, subsidised restaurant, BUPA, share option and profit sharing schemes.

To apply or obtain more information, contact Dave Anderson, Deputy Head, Company Systems Department, Stamford House, Stamford Street, London SE1 9LL. Tel: 01-821 7323.

**SAINSBURY'S**  
MORE OF A CHALLENGE.  
MORE OF A CAREER.

## COMPUTER WEEKLY

Classified Department, Dorset House,  
Stamford St, London SE1 9LU

Box Numbers: Should be addressed to  
the box number in the advertisement c/o  
Computer Weekly at the above address.

Classified Rates: £13 per annum.  
19 x 3 cols = £240, 39 x 3 cols = £1,260.  
Half Page (19 x 7 cols) = £1,300.  
39 x 4 cols = £1,620.  
Full Page (39 x 7 cols) = £2,000.

Copy Deadline: 3.30 pm Monday prior  
Thursday publication date. Complete  
enquiry up to 11 am Tuesday. Advanced  
space reservation is advisable.

LONDON  
Assistant Classified Manager:  
Chris Prier 01-261 8028  
Mark Pulver 01-261 8067  
Ken Watford 01-261 8018  
Neil McDermott 01-261 8004  
Vic Sherat 01-261 8088  
Denise Smith 01-261 8464  
Ian Faux 01-261 8174  
Julie Hannaford 01-261 8002

MANCHESTER/GLASGOW  
Owen Kelly 061-872 4211  
Geoff Aiken 061-872 4211

BIRMINGHAM/BRISTOL  
Stan Harris 021-368 4888

### MERSEYSIDE

#### ANALYSTS

(DR/981) 15 + months financial systems £5500  
(DR/982) 15 + months ICL commercial background £2500  
(DR/983) 18 + months manufacturing systems (IBM site) £6000  
(DR/984) 18 + months IBM/ICL financial background £6000  
(DR/985) 18 + months commercial environment £6000  
(DR/986) 2 + years manufacturing environment £6000  
(DR/987) 2 + years commercial experience (COBOL background) £6000  
(DR/988) 2 + years ICL commercial environment £6000  
(DR/989) 2 + years IBM (CICS) £6000  
(DR/1000) 3 + years senior computer specialist (ICL background) £7500  
(DR/1001) 3 + years senior IBM position, commercial environment £7500  
(DR/1002) 3 + years manufacturing systems (IBM background) £7500

#### PROGRAMMERS

(DR/1003) 15 + months IBM COBOL environment £6000  
(DR/1004) 15 + months commercial IBM installation £6000  
(DR/1005) 18 + months COBOL experience (any mainframe) £6000  
(DR/1006) 18 + months IBM/ICL financial background £6000  
(DR/1007) 18 + months Honeywell environment £6000  
(DR/1008) 18 + months IBM COBOL/ASSEMBLER £6000  
(DR/1009) 18 + months COBOL experience £6000  
(DR/1010) 2 + years COBOL experience, any mainframe £7000  
(DR/1011) 2 + years IBM/ICL financial environment £6000  
(DR/1012) 2 + years Honeywell environment (IDS/TDS) £7500  
(DR/1013) 3 + years IBM COBOL £7500  
(DR/1014) 3 + years commercial Honeywell background £7500  
(DR/1015) 3 + years senior technical ICL position £7500  
(DR/1016) 3 + years systems experience, Honeywell environment £8000  
(DR/1017) 3 + years senior IBM position £8000

### GREATER MANCHESTER

#### ANALYSTS

(DR/1018) 15 + months ICL background £5500  
(DR/1019) 15 + months Honeywell COBOL background £5800  
(DR/1020) 15 + months analyst/programmer positions (most mainframes) £5900  
(DR/1021) 15 + months most mainframes £5700  
(DR/1022) 18 + months ICL environment £6000  
(DR/1023) 18 + months financial background £6100  
(DR/1024) 18 + months experienced IBM analysts £6000  
(DR/1025) 18 + months Burroughs environment £6100  
(DR/1026) 2 + years Honeywell background £6500  
(DR/1027) 2 + years solid commercial IBM background £6500  
(DR/1028) 2 + years mini environment (DEC experience essential) £6500  
(DR/1029) 2 + years sales support (most mainframes) £7000  
(DR/1030) 3 + years senior IBM position (programming background) £7000  
(DR/1031) 3 + years Honeywell environment (IDS/TDS background) £7000  
(DR/1032) 3 + years senior position (IBM background) £7500  
(DR/1033) 3 + years IBM experience (ASSEMBLER background useful) £7200  
(DR/1034) 3 + years senior position (ICL environment) £7300  
(DR/1035) 3 + years senior IBM position, programming background £7500

#### PROGRAMMERS

(DR/1036) 15 + months ICL COBOL environment £4500  
(DR/1037) 15 + months ICL/Honeywell COBOL environment £5800  
(DR/1038) 15 + months large IBM site (COBOL/ASSEMBLER preferred) £5800  
(DR/1039) 15 + months commercial ICL environment £5800  
(DR/1040) 18 + months ICL on-line COBOL experience £7000  
(DR/1041) 18 + months IBM COBOL programming experience £5800  
(DR/1042) 18 + months software house position, car provided £6300  
(DR/1043) 18 + months most mainframes analyst/programmer background £6500  
(DR/1044) 18 + months financial IBM COBOL environment £7000  
(DR/1045) Mini sales support position, car provided £7000  
(DR/1046) 2 + years Burroughs environment £6500  
(DR/1047) 2 + years ICL COBOL environment £6500  
(DR/1048) 2 + years IBM analyst/programmer (financial background) £6500  
(DR/1049) 2 + years IBM position - COBOL and/or ASSEMBLER £6500  
(DR/1050) 3 + years Burroughs COBOL (MCPV) £7000  
(DR/1051) 3 + years senior IBM position (ASSEMBLER background) £7000  
(DR/1052) 3 + years commercial Honeywell installation £7000  
(DR/1053) 3 + years IBM systems programming experience £8000  
(DR/1054) 3 + years sales support (most mainframes) car provided £7800

NORTH WEST CONTACT

CATHY SCOTT

Interested? Send coupon FREEPOST or phone quoting relevant reference.

NAME	AGE
ADDRESS	
LANGUAGES USED	
PHONE: HOME	
BUSINESS (will be used discreetly)	
YRS ANALYSIS	YRS PROGRAMMING
MACHINES USED	
JOB SOUGHT	REF No
SALARY	SALARY REQUIRED



DATA RESOURCES AGENCY  
P.O. BOX 43, 8th FLOOR,  
COPTHALL TOWER HOUSE,  
HARROGATE HG1 1TS  
TELEPHONE HARROGATE 55311

RECRUITMENT AGENCY

24 HOUR ANSWERING SERVICE

### WEST MIDLANDS

#### ANALYSTS

(DR/1055) Senior analysts - manufacturing systems £8000  
(DR/1056) 3 + years commercial systems £7500  
(DR/1057) 18 + months commercial systems £6250  
(DR/1058) Senior analysts financial systems £7750  
(DR/1059) 2 + years commercial (COBOL background) £6500  
(DR/1060) 3 + years commercial (PL/1 background) £7500  
(DR/1061) 2 + years ICL preferred £7250  
(DR/1062) 2 + years analyst programming £7000

#### PROGRAMMERS

(DR/1063) 2 + years Univac COBOL £6000  
(DR/1064) 2 + years COBOL any mainframe £6250  
(DR/1065) 3 + years Honeywell COBOL £6500  
(DR/1066) 18 + months COBOL - new hardware £6500  
(DR/1067) 12 + months ICL COBOL £5250  
(DR/1068) 3 + years ICL COBOL £7200  
(DR/1069) 2 + years COBOL any machine £8000  
(DR/1070) 12 + months Honeywell COBOL £4700  
(DR/1071) Senior programmers COBOL any mainframe £7650  
(DR/1072) 18 + months Honeywell COBOL £5700  
(DR/1073) 2 + years IBM COBOL £6000

### WEST YORKSHIRE

#### ANALYSTS

(DR/1074) 4 + years (including programming background) £7000  
(DR/1075) 2 + years commercial systems £6500  
(DR/1076) 18 + months (plus programming background) £6500  
(DR/1077) 2 + years financial systems (COBOL background) £7500  
(DR/1078) 2 + years commercial systems (COBOL background) £7500

#### PROGRAMMERS

(DR/1079) 2 1/2 + years COBOL £6000  
(DR/1080) 18 + months IBM COBOL £6000  
(DR/1081) 2 + years COBOL on any mainframe £5500  
(DR/1082) 18 + months ICL COBOL - 2900 site £6500  
(DR/1083) 2 + years ICL COBOL £5500  
(DR/1084) 18 + months COBOL on any mainframe £5500  
(DR/1085) 2 + years ICL COBOL £6000

### TYNE & WEAR

#### ANALYSTS

(DR/1086) 18 + months commercial systems £6500  
(DR/1087) 2 + years financial systems £7250  
(DR/1088) 3 + years manufacturing systems £7500  
(DR/1089) 2 + years (COBOL background) £6800  
(DR/1090) 3 + years manufacturing systems £6500  
(DR/1091) 2 + years production systems £7500  
(DR/1092) 2 + years (including programming background) £7000

#### PROGRAMMERS

(DR/1093) 2 + years COBOL on any hardware £5500  
(DR/1094) 18 + months IBM COBOL £6500  
(DR/1095) 3 + years PL/1 £6500  
(DR/1096) 2 + years IBM COBOL £6500  
(DR/1097) 3 + years ICL COBOL £8000

WEST MIDLANDS, N.E. &  
YORKS. CONTACT

CATHY SCOTT

### SCOTLAND

#### ANALYSTS

(DR/1098) 2 years IBM preferred £6500  
(DR/1099) 18 months analyst programming £6000

#### PROGRAMMERS

(DR/1100) 3 + years IBM systems programming £7500  
(DR/1101) 4 + years CICS, DL/1 £8500  
(DR/1102) 2 years IBM 370 systems programming £6500  
(DR/1103) 3 + years COBOL IBM preferred £7250

SCOTLAND CONTACT

KAY MacDONALD

### CAMBRIDGESHIRE

#### ANALYSTS

(DR/1104) 3 + years project leader, financial systems £9000  
(DR/1105) 3 years database designer + administration £9000  
(DR/1106) 2 + years major projects experience £8000  
(DR/1107) All d.p. backgrounds £7000

#### PROGRAMMERS

(DR/1108) 2 + years systems programmer PL/1, CICS, DOS £8000  
(DR/1109) 1 year minimum - all grades PL/1 £8000

CAMBRIDGESHIRE CONTACT

ROGER PICKIN

# DATA



# TOMORROW'S TOP SYSTEMS NEED

## TODAY'S TOP PEOPLE

**Managers and Team Leaders**  
**£9,000 - £13,000 + car**

Our client is well-respected as one of the leading names in a specialised field where the knowledge, skills and creativity of a top-flight team of **Software and Systems Engineers** are of particular value.

The existing team, developing real-time communications systems, is now seeking extra strength in order to maintain and augment its position during the coming years.

We are looking for a small number of men and women who

can contribute not only technical expertise and innovative flair, but also the special qualities that will inspire and motivate others. Importance is placed on communication skills, as the ability to participate in discussion groups - often as the company's spokesman - is vital.

The company operates from spacious premises in a rural setting in the Home Counties. Full relocation expenses will be met and there is a generous and comprehensive fringe benefit package.

CONTACT JACK COWDY, DIRECTOR, ON 01-603 7335 Quoting ref. LA/80

## Information Processing People

58 Pembroke Road, London W8. Telephone (24 hours): 01-603 7335/6. Telex: 261298

# Education and Training Officer

Salary c.£7k+ Bonus  Nottingham

Our client, the Boots Company Limited, require an Education and Training Officer for their Management Services Department based in Head Office, Nottingham, where their rapidly expanding computer capacity currently comprises an IBM 3032 and a 370/158. Development staff numbers are also increasing and over 100 programming staff work on a wide variety of retail, industrial and accounting applications. There is a substantial new graduate intake annually, and major resources are devoted to staff training and development.

The Training Officer has a comprehensive responsibility for maintaining and improving the standard of programming and systems analysis at all levels. This includes using external courses when appropriate and running internal training schemes which involve the use of video assisted instruction as well as personal instruction.

Candidates should have the ability and practical programming experience (preferably IBM COBOL and Assembler) to be able to advise more senior programming staff on a range of technical problems. Experience of training or teaching coupled with well-developed communication skills would be a distinct advantage.

Salary is likely to be in the region of £7,000 plus a profit-related bonus and staff discount facilities. Generous relocation expenses are available (where appropriate).

For further details, contact Keith Gregory (reverse charges) on 021-643 8501 quoting ref. KG/075/CW10/4.

## Computer People

### Midlands

Alpha Tower  
Birmingham B1 1TT

021-643 8501

Computing Services  
Recruiting for clients

VLIgroup

## contracts for operators CoOperators

VLIgroup

These are some of our current assignments:

IBM DOS VSE ..... Kent  
OSVS1 Operators ..... all areas  
OSVSI CICS JCL Writers ..... all areas  
HONEYWELL Level 6 ..... Amsterdam  
OS2000 ..... all areas  
GCOS ..... all areas  
PDP 11 AIMS RSTS RSX ..... London

In addition, we have many more immediate short and long term requirements for experienced and trainee operators.

For full details of all our contract assignments  
Ring CoOperators today on 01-836 8411 (489)

To FRK PROG/ANALYST London  
At least 2 yrs. RPG 11 programming required using IBM System 3 and good systems analysis experience.

To FRK PROGRAMMER London  
You will need at least 2 yrs. ASSEMBLER programming experience and be able to take responsibility for individual projects, for which a performance bonus is awarded.

to FRK SNR. PROGRAMMER London  
Min. 4 yrs. COBOL programming and preferably Honeywell experience.

Many more unadvertised positions

168 FINCHLEY ROAD, LONDON NW3  
Telephone: 01-794 0202

UNIVERSITY OF ESSEX  
LECTURERS IN THE  
DEPARTMENT OF ELECTRICAL  
ENGINEERING SCIENCE  
Applications are invited for two posts of Lecturer (salary scale £6,052-£10,484) in the above Department, for appointment from 1st October, 1980, in the areas of DIGITAL SYSTEMS and MICROCOMPUTER SYSTEMS. Candidates should have a degree, and relevant experience in some branch of computer engineering or computer systems. For the former post, candidates should preferably have knowledge of digital and computer hardware design, including microprocessor-based design, and will be expected to teach courses on these subjects at an undergraduate level. For the latter post, candidates should preferably have a research interest in interactive computer systems, speech communication with computers, computer graphics, or some other aspect of man-computer communication, and will be expected to teach in areas of man-machine systems and software.  
The Department of Electrical Engineering Science is a young department with active research interests in telecommunication systems, instrumentation, display and visual systems, computer-aided design, and man-computer systems.  
Applications (8 copies), including curriculum vitae and the names and addresses of 2 referees, should reach the Registrar (AG/103/CV), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained by May 8, 80. (483)

## OCC Contracts Personnel

Initial Contract Periods are from 6 months to 2 years

### Central & Southern Germany

IMS Systems Software Major IBM installation. MVS, JES2, NCP, TSO, etc. £500 +

IMS DB/DC Systems Software Internal knowledge required for tuning, etc. £600 +

IMS/PL1 Analyst Programmer. Some German useful. c. £500

8080/85 Programmers for technical systems. German pref. £400 +

### Switzerland

Telephony Systems Analyst Programmers with 2 years+ Comm. exp. Some German required. £ Neg.

### Southern Holland

Honeywell Level 6 Software development projects. £400 +

PDP11-RSX11 Technical applications - FORTRAN. c. £400

Mini/Micro Systems Analyst Programmers for RT/On-line Automation & Control systems. £400 +

### Middle East

MK4, PL1 of COBOL Analyst Programmers for major IMS projects. Tax free, accom., etc. to £500

### U.K.

H Level 6 London - Project Leaders and Analyst Programmers. £280 +

PL1, COBOL or MK4 London - Programmers - IMS exp. ideal £300 +

Avionics/Simulation S. London - Design and Programming c. £270

CORAL Essex - Programmers - Technical systems. £260 +

IBM OS Assembler Essex - Software devel. projects. £270 +

IBM OS/DOS COBOL East Anglia / Midlands - Programmers. £270 +

Mini & Micro East Anglia - Designers and Programmers. £260 +

COBOL CICS DL1 North West - Senior Programmers. £350

2903/04 MTS Midlands - Analyst Programmer. £250 +

PL1 Wiltshire - Programmer. £260 +

For further details please contact Roger Allington (dev/evangel).  
OCC Contracts Personnel  
1 Shootersway Park, Berkhamstead, Herts. HP4 3NX. Ref: PL28

Berkhamstead (04427) 2299

## Financial Consultants

A Leading London-based Consultancy and Systems House, with a wide variety of interests in the financial and commercial world, is currently expanding its teams in the Sales Support/Consultancy fields. The qualifications required for these prestigious positions are a general financial background, with some knowledge of accounting, and preferably with experience of designing at least one complete system. Recent programming experience would be appreciated, as consultants will be expected to participate fully in projects, including a considerable amount of client liaison, and making a contribution to the sales effort of the company. Experience of IBM mainframes advantageous, however our Client deals with a variety of minis and mainframes, making knowledge of several machine ranges of considerable interest. Benefits include profit sharing, non-contribution pension, life assurance and BUPA schemes. Relocation expenses where applicable.

**£7.5-12K**

## DB-Berks

Our Clients, a leading IBM compatible software Manufacturer, and Distribution house, are seeking high-calibre data base professionals. You'll have sound experience of Environ/Shadow/Total, preferably with a financial background. There are opportunities for career enhancement at their European HQ.

To £10K

## DEC Surrey

If you have a sound background in Telecommunications, with RSTS or RSX-11 and preferably Basic/Fortran, our clients, a Financial Systems Bureau based in Croydon will be able to accommodate your Programmer/Analyst career ambitions, with a salary that reflects our client's worldwide standing.

To £8.5K

## Central and North West London

One of the world's major Software Systems Companies is currently recruiting for two major projects located in Central and North-West London, and employing some of the most advanced technology in the fields of distributed processing, teleprocessing, databases and command and control systems.

If you have experience in these fields, and more particularly in any of the following: on-line VDU's, large 2900's, graphics, inter-computer networks or real-time minis, our Clients will be anxious to hear from you. Vacancies exist at both senior and junior levels, from Programmers, through Analysts and Designers to Consultants.

The work involved will be designing VDU screen formats and transaction phases, and developing a large scale computer network. The positions provide a technical challenge; an opportunity to break new ground. The rewards are commensurate with the Company's international reputation, including BUPA, pension schemes, car schemes, and other benefits.

**Salaries £7.5-11.5K**

## IBM & Siemens Germany

Experience of IBM 370/158's under OS/MVS and VS11 or Siemens Mainframes/Minis under BS1000 and 2000 is of prime importance in your application to this Multi-national Corporation, which has requirements for Systems and Applications Programmers, Designers and Analysts at several of their West German offices. Any TP/DMS experience including CICS, IMS, TOTAL, ADABAS etc in commercial or technical fields will be especially welcome. An ability to communicate in German is highly advantageous, as liaison with the Company's clients may be one of your functions. The positions are permanent, so a genuine desire to relocate is essential. In addition to a high salary you will receive an annual holiday bonus and a wide range of fringe benefits.

£13-19K + Benefits.

## Thames Valley

The Client: Probably the biggest Software Systems Group in Britain, with real-time projects in Government and Military applications. The Candidate: A Programmer with extensive experience in 1900, 2900 series, VME/B and preferably IDMS or TOP. Knowledge of Assembler/Fortran or Corel advantageous.

£6.5K-£8.5K

## Univac

Programmers and Senior Programmers to work on a sophisticated on-line real-time banking system currently being developed on a Univac 1100 linked to many Burroughs terminals. You should offer experience in Univac 1100 with OS TIP or DMS and Univac Assembler. Location: near Manchester.

To £8.6K + Mortgage ass.

  
D.O.E. Lic. No. SE(A)127

10 Grenville Place  
London SW7 4RW

01 373 3063

to 8.30pm 7 days a week

## BOX Nos.

Box number replies should be addressed to:

Box No.

c/o Computer Weekly

Freemantle House, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

**FURTHER APPOINTMENTS  
CONTINUED ON  
PAGE 20**



# First UK 4341 user hails its reliability

FIRST UK user of the IBM 4341, Sterling-Winthrop of Surbiton, reports the three-month-old machine has proved "extremely reliable".

Previously a DOS/VS user on a 370/145, Sterling-Winthrop is moving to DOS/VSE plus VM/370 and expanding from a completely in-house system to an SNA network of 3270 terminals.

"We had to move to DOS/VSE because we can't use the new 370 disc drives without it," computer services director Ray Piggott told Computer Weekly.

"We were expecting our IPO/E (Installation productivity option which facilitates the mounting of a new operating system on the 4300) in February and, in fact, we have only had it a couple of days.

"We did pick up a temporary version of DOS/VSE from IBM at Greenford, but we found it had several bugs in it, so that without the IPO it was not feasible to use it.

"At present we are running

DOS/VS under VM/370, and we plan to use VM forever. We are developing an APL capability and VM provides a better APL personal computing service than the alternatives. We are also using VM/CMS for program development.

"It means that, for the first time, our systems programmers can do tests in an operating environment instead of waiting for night-time or weekends.

"We have some non-IBM software such as Logout and Spacemanager and we have had Macro 4 around here testing their DOS/VSE versions of these, too."

IBM's tardiness in delivering the DOS/VSE IPO/E has, so far, prevented Sterling-Winthrop from testing DOS/VSE alongside the production DOS/VS workload.

"It does not look as if conversion from DOS/VS to DOS/VSE will be much of a problem: VSE looks upward compatible but

until we have had the IPO/E a little longer we won't know for sure."

Sterling-Winthrop is a diversified company in both proprietary and prescription medicines, do-it-yourself products, fine chemicals and industrial hygiene products.

Applications include order processing, general and sales ledger, sales statistics, company records, distribution, stock control, project control, customer inquiry and document retrieval. It is planned to have all applications online within three years.

The 4341 configuration includes two megabytes of main memory, a 3880 controller and seven 3370 disc drives. Sundry peripherals including nine Memorex 6330 disc drives have been transferred from the 370/145. The 4341 is on lease from IROS Leasing, which is part of the Bank of Scotland. It was acquired through computer brokers IBL.

IBM's tardiness in delivering the DOS/VSE IPO/E has, so far, prevented Sterling-Winthrop from testing DOS/VSE alongside the production DOS/VS workload.

"At present we are running



Sterling-Winthrop, the first UK user of the IBM 4341 says it has been "extremely reliable". Here, the firm's computer services director Ray Piggott shows group finance director Vic Underhill the video console of the system.

## CII-HB launches world's first micro credit card

The world's first micro-based credit card system, called CP 8, has been launched by CII-Honeywell Bull and consists of three elements: the card itself, a transaction recorder which writes to a memory module and a module reader for banks.

The microprocessor is thought to be a Mostek 3872 (CW, December 20, 1979) which is encapsulated into the card, which has a program memory and 4K-bit EPROM memory and an interface limited to eight contacts.

The card is the same size as a standard credit card, 3.4 x 2.2 inches, and is about one twentieth of an inch thick. The name and number of the card holder is embossed on it and, in the top left-hand corner, there is a circle divided into eight zones by black lines. These form the connections to the chip encapsulated in the card.

The bank supplies the client with a card and the EPROM already charged with

## Microforum Europe to be merged with the IBS

MICROFORUM Europe is to be merged with the biennial International Business Show in the years that IBS is staged starting with the next IBS, which runs from October 20-29, 1981, at the National Exhibition Centre, near Birmingham. This development means that there will be no

Microforum in the spring of next year. The Business Equipment Trade Association, which organises both Microforum and IBS, is currently considering whether it should scrap Microforum altogether as a separate event or to stage the micro-

graphics show once every two years.

Till now Microforum has been an annual show; this year's was held last month at the Wembley Conference Centre (CW, March 21). The three-day event attracted about 4,000 visitors.

## DP's nuts and bolts side goes on show

THE nuts and bolts side of the computer industry goes on show next week at the West Centre Hotel, Lillie Road, London, when Peripherals 80 opens its doors to professional purchasers of peripherals, terminals and add-on hardware.

Sponsored by Computer Weekly's sister publication, Systems International, Peripherals 80 runs from April 16 to 17 and is presented by the Peripheral Suppliers Association, the organisation that represents the collective inter-

ests of a line-up of independent firms which sell much of their kit on an OEM basis. One of the latest firms to join the PSA is Control Data, UK arm of the world's biggest supplier of OEM peripherals.

The majority of kit on show will be of US origin, underlining the fact that the UK suffers from a serious balance of payments deficit in peripheral equipment, in particular OEM kit. Exports of end user VDUs and other kit by IBM and one or two other mainframe suppliers probably

account for the lion's share of UK peripheral exports.

Hardware either built by Digital Equipment itself or compatible with DEC based systems will be very much in evidence at the show and microcomputer systems builders should be interested in the 8-inch Winchester disc drives being exhibited on several stands.

Peripherals 80 is organised on behalf of the association by IPC Exhibitions.

## CW helps to boost graduate recruitment

COMPUTER Weekly is aiming to boost the number of graduates entering the computer industry with a special graduate recruitment supplement, to be published on April 30.

The supplement will include articles by leading industry figures and by people who have come into the industry from university, polytechnic or college. It will be aimed at graduates of all disciplines.

The supplement will not be posted to people on Computer Weekly's normal circulation list but will be sent in bulk to careers officers at universities and colleges.

Training or careers officers at commercial colleges wishing to receive the supplement, contact Brian Durrant, Classified Advertising Manager, Computer Weekly, Dorset House, Stamford Street, London, SE1 8LU.

## Lloyds adds 3033s

THE special relationship between Lloyds Bank and IBM has been further cemented with a £6 million order for two more IBM 3033 mainframes, each with the maximum 16 megabytes of main memory.

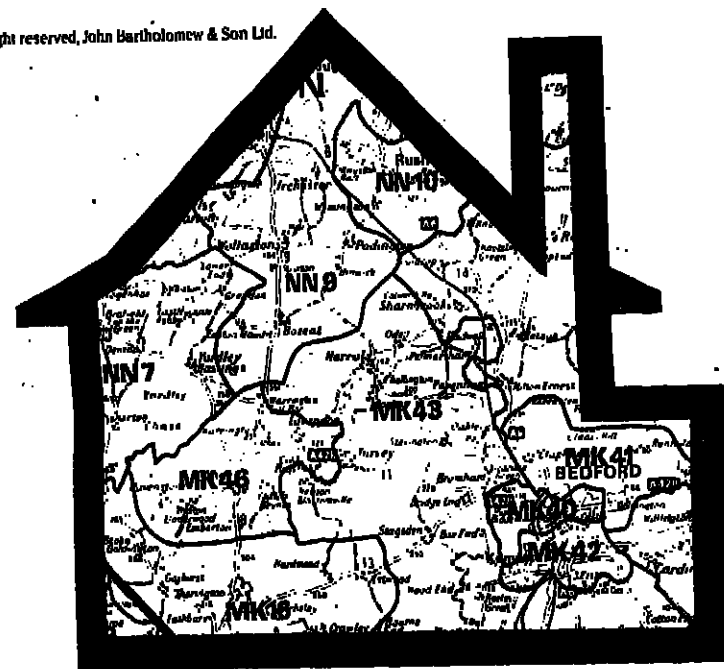
## Similar name embarrasses consultancy

THE financial troubles of the UK software house HPAC (CW, March 13) are causing embarrassment at the software and microcomputing consultancy Hugh Pushman and Associates of Poole, Dorset.

"Because of the similarity between 'HPAC' and the initials of our name we've had many worried customers ringing up to say they've heard we're going out of business," said marketing manager Robin Wilkinson. "HPAC used to be a subsidiary of ours but we split two years ago. We're still growing and are profitable."

Robinson said Hugh Pushman was growing at 60% a year. Its turnover for its current financial year would be £750,000.

Copyright reserved, John Bartholomew & Son Ltd.



Could you analyse and index 22 million addresses countrywide, street by street? This is what the Postcode does. And the results are at your disposal.

## FOR POSTCODE READ SAMPLING CODE.

Defining geographic areas for market research exercises and surveys can be quite a problem. There are 22 million addresses in the country. How do you collate them, group them, draw sensible boundaries round them?

The answer is, the Postcode system can do it for you. It takes in every address; divides the country into different sized geographic units; and can give you any number of addresses, or any size of area you want.

The Postcode system is ready-made, complete, and constantly updated. It is well supported by Postcode maps, delivery point statistics and computer held data. It could help you with your sampling problems.

For a start - send us the coupon and we'll send you our booklet which tells you how Postcodes can help you in your business.

## Use the Postcode - you're not properly organised without it!

I am interested to see how Postcodes could help me in my business. Please send me your booklet "Using Postcodes in Business Systems".

Return the coupon to Cledwyn Davies, FREEPOST (No stamp required) Room 446A, Postal Headquarters, St. Martin's-le-Grand, LONDON EC2B 1HQ.

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
Postcode \_\_\_\_\_

**Royal Mail**

After nine hundred and ninety-nine successful implementations of FILETAB, the next one should be something special.

It could be yours. FILETAB works for all of the larger IBM installations world-wide.

Every 360/370, 303X and 4300 user can enjoy the benefits of the UK's most successful file maintenance and reporting system.

Benefits like simple, immediate, very flexible report generation and information retrieval - both areas where fast response is the key to improving service to user departments.

And quicker, more concise, and more comprehensive file creation, conversion, amendment, updating, and data validation.

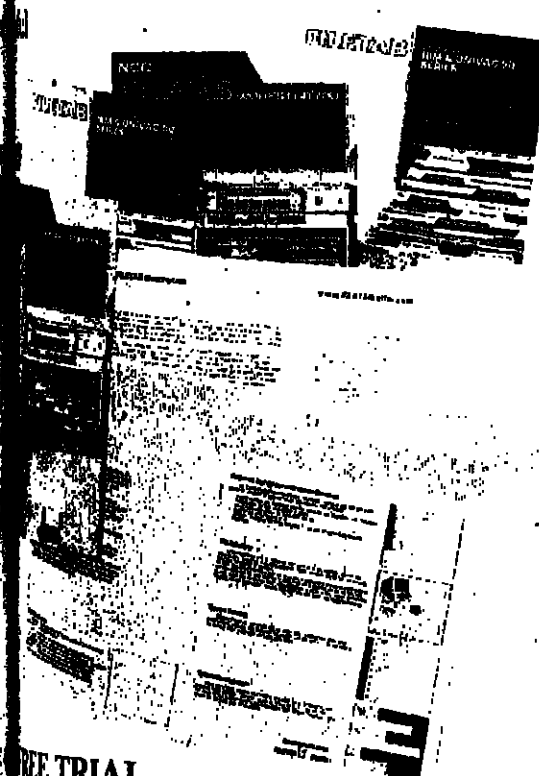
And complete, accurate system testing - but with none of the clerical

## Filetab for IBM

effort usually involved in compiling test data.

And, if you're really looking for programmer throughput, accelerated system development, using FILETAB as a powerful, flexible, self-documenting high-level language.

FILETAB - one of the best ways to improve productivity on IBM



FREE TRIAL

Ask for more information.

And why not also ask for an unconditional free trial on your IBM? It's the best way we have of proving that FILETAB is everything we claim.

Complete the coupon for details.

National Computing Centre Limited  
100 Road, Manchester, M1 7ED Telephone 061-228 6333

I would like a free trial of FILETAB for IBM

Could like further details of FILETAB for IBM:

(Tick as appropriate)

(Block capitals please)

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
Postcode \_\_\_\_\_

Telephone number \_\_\_\_\_

Machine Type: 360/370 ☐ 303X ☐ 4300 ☐ Other ☐

Specify operating system: \_\_\_\_\_

## TR PDX - the digital communications switch for the electronic office



Today the Telephone Rentals Private Digital Exchange (TR PDX) is providing a telephone communications system, with many operational and cost advantages, for a number of 'household name' UK organisations. It is an electronic, computer controlled, digital exchange with all the benefits of Stored Programme Control (SPC), Pulse Code Modulation (PCM) and Time Division Multiplexing (TDM). It is the first British built digital exchange to bring all these principles together and the first to obtain Post Office approval.

Not only is the TR PDX operating beneficially as a PABX but it will be available as a Tandem, Sub-Tandem, Main or Satellite system for private networks. But clearly the technology of the TR PDX will provide the digital switch essential to operating the integrated business communications and data systems of tomorrow's electronic office. Certainly for the remainder of this century.

So as a DP Manager you'll want to know more about it. If you telephone Telephone Rentals at Milton Keynes (0908 71200) and speak to Jim Brokenbrow or Peter Danby on our own PDX, we'll be glad to let you have more information. Ever arrange a Presentation.



See it on Stand 2B 20 Hall 2 COMMUNICATIONS 80

Telephone Rentals Ltd.

15 House, Bickley, Milton Keynes MK5 6LL Telephone: 0908 71200

Telephone Rentals

John P. 15/80



# HEAR MICHAEL JACKSON ON SYSTEM DESIGN

Significant advances have been made over the last decade in the field of program design. The ideas of Structured Programming are now accepted and the method developed by Michael Jackson has been particularly successful. Jackson Structured Programming (JSP) gives programmers a grip on the design task which most would not have conceived possible.

Although programming problems are now better understood, difficulties still face the designer at the system level. An ad hoc approach is only sometimes successful. There is no method for system design comparable to JSP for program design.

The ideas underlying JSP are equally applicable in the systems area. For some time it has been clear that an extension of JSP into system design was possible. Recent technical advances have turned the theoretical possibility of extension into a practical reality. Michael Jackson Systems Limited are presenting a two day tutorial on the technical advances and the system design method they lead to. The new ideas are known collectively as the Jackson System Development (JSD) method.

The first tutorial on JSD will be held in London on the 5th and 6th of June. The price will be £200 exclusive of VAT. Demand for this tutorial is expected to be high, so we advise you to book early to be sure of a place.

**PLEASE NOTE:** JSD (systems) builds on the ideas of JSP (programs). To understand the tutorial you will need a reasonable working knowledge of JSP. We have arranged a special three day workshop, immediately before the tutorial, for people not yet familiar with JSP. This workshop will cost £200 exclusive of VAT.

For more information about the tutorial and the workshop, complete the coupon below and return it to:

**Michael Jackson Systems International Limited**  
7 Cambridge Court, Cambridge Road, London SW20 0SG.  
Telephone: 01-847 3085

Tick as appropriate

- ☐ Please send me more information on the Jackson Systems Development (JSD) Tutorial  
☐ Please reserve me ..... places on the JSD Tutorial.  
☐ Please reserve me ..... places on the preceding JSP Workshop

Name .....

Job Title .....

Organisation .....

Address .....

Telephone .....

## Payroll changes after the Budget

ON the face of it the 1980 budget changes for payroll are simple, straightforward and routine.

Tax rates and bandwidths change in the usual way, and will not cause any hiccups or loss of sleep to payroll programmers. The details are in the notes on PAYE for computer users by the Inland Revenue.

Some of the fine detail in these notes is of a rather less routine nature, and the Chancellor's speech also contains mention of many changes to come.

There is for the first time an automatic (PTX) change to T suffix tax codes. This change does not affect the numeric part of the tax code, but requires all T suffix employees for whom a tax code change dated May 18 is not received from the tax office to be put on a week 1 basis. These employees might otherwise start paying excess tax due to the abolition of the 25% band from the tax table.

The requirement can probably best be met in practice by putting all T suffix tax coded employees on a week 1 basis programmatically and subsequently submitting the code changes dated May 18 to a separate update run.

An administrative change is also contemplated by the Inland Revenue. At present, an optional section in the specification for computer routines deals with the somewhat rare cases or rounding differences between the computer-produced figures and the manual tax tables. The Revenue is considering incorporating this optional section into the mainstream specification. Such a change will add to the size and complexity of PAYE computer routines and programmers will need to consider how they can best accommodate this change.

The Chancellor's other pronouncements all have a delayed action effect. Largely they are notices of intention and of proposed consultation.

Employers will have responsibility for making a minimum level of sickness payments to their employees during the early weeks of sickness from April 1982. No details have been published as yet on how the scheme would work, but a Green Paper is to come out shortly.



The immediate and medium term implications of the Chancellor's Budget proposals are reviewed by CLIFF DILLOWAY. The immediate impact is routine but there are some significant changes on the way over the next two years. Relieving direct taxation on enterprise and imposing it on social security benefits has ramifications that will be seen in payroll by 1982.

Presumably the employer's payments would be financed by a reduction of the National Insurance contribution. The prime intention of the scheme is to make sickness benefit taxable.

The same intention holds good for the taxation of unemployment benefit, but there is even less information on how the scheme might work. The Chancellor said: "The claimant will neither receive refunds nor suffer deductions of tax until he is back at work." On the face of it, these words imply that the new employer will be responsible for adjusting the tax payments of all new employees who have been in receipt of unemployment benefit. The straightforward operation of the cumulative PAYE system would achieve this end, but program changes would be required to take account of the unemploy-

ment benefit taxed but not paid by the employer. There would also be an increase of "refunds not made" for leavers and at year end.

A similar recovery of tax by employers on account of social security benefits is implied in the decision to tax benefits paid to strikers' families. At the same time no income tax refunds are to be given to strikers until after the end of the strike, when, presumably, the paying of the accumulated amount of the refund will enable the employee to pay the tax on the benefits. There will be time for consultations on these proposals as the necessary legislation is not intended before the 1981 Finance Bill.

The proposal made last autumn that benefits in kind (particularly cars) should be taxed through PAYE has not been abandoned by the Government.

The Chancellor has singled out free petrol for private use in company cars as a target for taxation if the "provision continues to spread at anything like its present rate". He admits that such taxation would present severe administrative problems for employers and the Inland Revenue.

The Chancellor has taken steps to encourage wider share ownership among directors and employees. A constraint on obtaining the benefits is that the shares must be purchased by means of a special SAYE scheme that is being set up.

On the brighter side, there is a possibility that less tax year end information will be required by the DHSS with the discontinuance of earnings related benefits in January 1982. These benefits are based on National Insurance contributions reported for the previous tax year as stored in the DHSS computer. The possibility dims when it is realised that the NI contributions will have to be reported anyway, and so there is not much chance of a change to procedures.

The 1980 Budget is a portent of things to come. The Conservative government is now starting to take the steps set out in its election manifesto. For good or bad these affect the pay packet and payroll programs.

Access Data:  
distributors for ...

**QUME  
FACIT  
MICROSTAR  
APPLE**

We offer:  
\* Installation & commissioning by our own engineers.  
\* Service & maintenance by our own engineers.  
\* On site warranty.  
\* Rapid call out on breakdowns.  
\* O.E.M. suppliers.  
Access Data  
Computer Systems Ltd.  
222 High Street, Dorking  
Surrey.  
Tel: 01875 222222

**ATTENTION  
ALL ICL USERS**  
While others promise, we supply  
CO2 & CO3



ICL 7502  
Batch Emulation

**Phone now to find out more**

**MDS** MDS Computer Systems (UK) Ltd.  
24 Lincolns Road  
Putney SW15 TEL: 01-874 8444  
(Please note new address)

Microprocessor

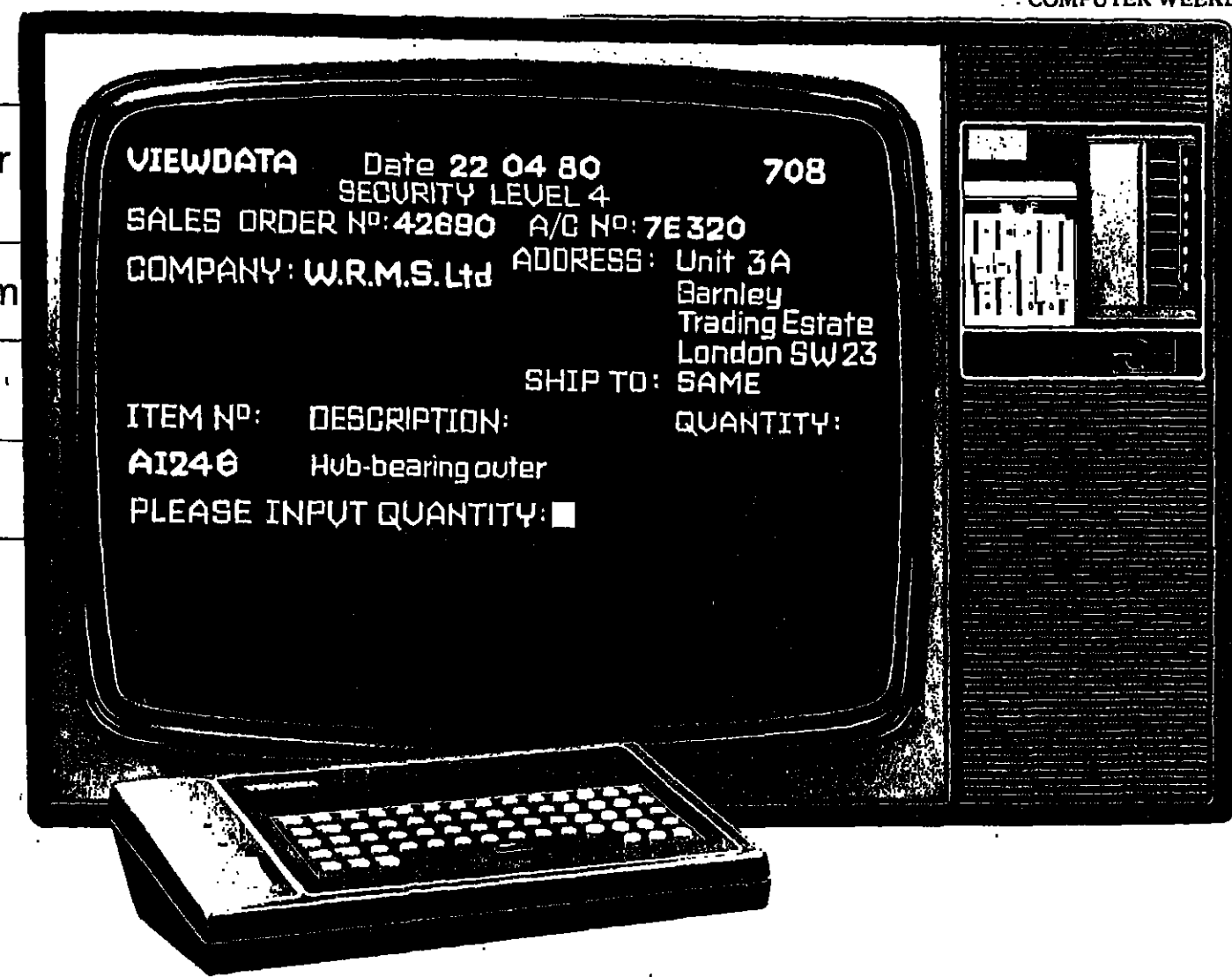
Telephone number  
memory

Embedded modem

Auto-dial unit

TV receiver

Optional:  
alpha-numeric  
message  
keyboard

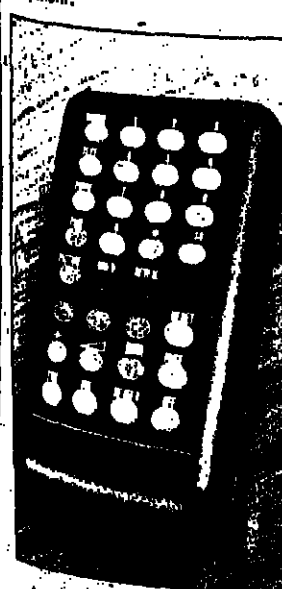


## This is Viewdata-Plus. The world's first interactive, full-colour viewdata terminal. And it's available now!

It's also the most spectacular feature of the remarkable new Integrated Office System from Redifon—the first system to combine advanced television technology with established computer and telecomms techniques, and so to provide a distributed data processing, data entry, data processing, and processing plus viewdata facilities (including private viewdata plus advanced data communications).

**Sounds impressive?  
Look at the rest  
of the system!**

As well as Viewdata-Plus intelligent TV computer terminals, the system also includes the following equipment:



Infrared remote control  
Enables non-computer staff to access public and private viewdata.

**Writaway  
hand-print terminal**

All characters (alpha, numeric, symbols) are written onto a writing pad, with pen or pencil. Writaway converts these characters into ASCII code for interface into the information-handling system. The handwritten copy provides a record of all information entered.

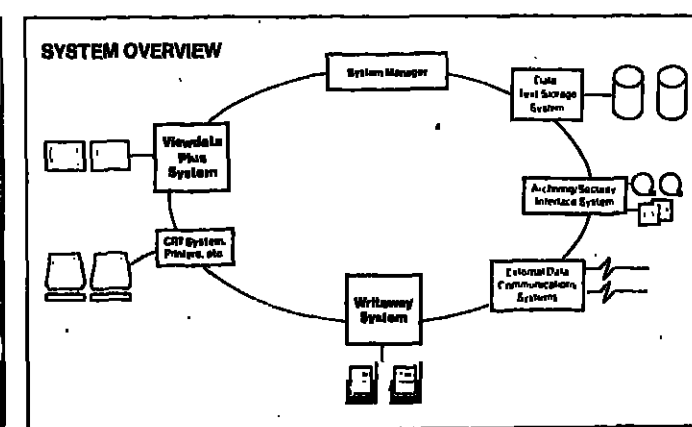
Writaway also has one line of display. Where this is insufficient, the command "Look at your TV" may, of course, be used.

**Printers,  
word processors, other  
peripherals**

Configurations are possible using all equipment commonly available, as part of the CRT system.

**Unique software**  
Based on the "sole user" principle, the software allows each terminal to act as if it were the sole user of the total system resources. This allows private viewdata to be completely interactive.

**System manager**  
The heart of the system, combining central processor, central storage unit and magnetic tape unit in a single updatable unit.



**See how Viewdata-Plus  
puts you years ahead – at a  
price you can afford today!**

Whenever you need immediate, interactive communication, in colour, you can afford to supply it with Viewdata-Plus. Viewdata-Plus can be...

**Sales, Stock, Ledgers,  
Production.** A network of terminals – Viewdata-Plus, Writaway, infrared control, alpha-numeric message keyboard, or a combination – offers a completely interactive, on-line, real-time up-to-date working system. Distributors, stores, production, accounts, sales offices – they can all be plugged into one smooth, integrated system.

**A notice board.** One set and an infrared control gives all staff access to official information and instructions put into private viewdata.

**A memo file.** Viewdata-Plus offers true electronic mail. Memos and answers can be entered

and routed through the system with Writaway or the alpha-numeric keyboard.

**A management information system.** With Viewdata-Plus in the boardroom or in senior management offices, management information updated to the second is instantly available. Software can preserve security!

**Records.** If you can file it, you can access it with Viewdata-Plus. From staff records to share prices, you can store it and retrieve it cheaply and securely.

**Training.** Simultaneous programmed learning facilities in as many locations as you please can be built into Viewdata-Plus. Software on the sole user principle means individuals can progress at their own pace.

**A new level  
of convenience in  
information-handling**

A network of low-cost, full-colour, all-function computer terminals had to come – and here it is. Such a network makes sound commercial sense – particularly when the equipment is user-friendly and easy to learn on. In-house computer training and communications; external networks of dealers, agents, customers... the range of valuable applications is open-ended.

**Why hasn't anyone  
done it before?**

No other company is Redifon! Redifon makes Britain's leading range of data-entry and distributed data-processing equipment. But Redifon is also part of the Redifusion Group

– which means first-hand knowledge of viewdata technology and in-house TV manufacture. Put them together, and the outcome is unique capability to produce a unique system.

**Find out more about  
Redifon Viewdata-Plus**

Viewdata-Plus is here – not a pie-in-the-sky future prospect. Working systems are already installed – and pilot systems for new users can be installed in about 60 days!

As public education in public viewdata gathers momentum, now is the time to investigate Redifon Viewdata-Plus.

If you can wait a couple of days, use the coupon.

If you can't – phone 0293 31211 and ask for HOTLINE, for immediate information.

## REDIFON COMPUTERS LIMITED

Redifon Computers Limited, Kelvin Way, Crawley, West Sussex, RH10 2LY. Telephone: 0293 31211. Telex: 877389.  
A Member Company of the Redifusion Organisation.  
\*PRESTEL is a Post Office registered trademark.

To: Product Marketing, Redifon Computers Limited,  
Kelvin Way, Crawley, West Sussex, RH10 2LY.

☐ Please contact me to arrange a demonstration.

☐ Please send me further details of the system.

Name .....

Position .....

Organisation .....

Address .....

Telephone .....



# Appointments

## THE NEWSPAPER COMPUTER PEOPLE RELY ON

# Appointments

# Knight

### Why Knight for Operators?

- \* Knight is part of BOC's Computer Services Division — large, stable and international.
- \* We respond at once to requests for staff from companies throughout the UK and Europe.
- \* We're highly experienced — with over 7000 contracts completed successfully for more than 1000 top European companies.
- \* We manage projects — and handle JCL writing and documentation for major conversions, start up of new installations and rundown of older ones.

#### CONTRACT OPERATORS

If you have a minimum of 2½ years operating experience Jane Asbury or Sharn Poll can give you an immediate up-to-date list of UK and Overseas contracts.

#### D.P. SALES PERSON

Outstanding opportunity for the right SALES personality to cover ALL S.E. Region. Full back up provided. Excellent benefits. Salary: £15,000 — 17,000 + including commission.

#### OPERATOR

IBM System 34 site require Console Operator. Hours 9-5 pm. Good prospects and Company perks. Salary: £ to 4,500 p.a.

#### SHIFT LEADER

Immediate position on Burroughs 6800 installation for experienced person. 2 shift system. Excellent company benefits. Salary: £5,878 p.a. +

#### SENIOR OPERATOR

Univac 90/40 just installed. Operator required with 2 years OS 3 experience. 2 shift system. Salary: £5,625 p.a.

#### OPERATOR

Company installing IBM 4341 in October. 6/18 months experience under DOS with GRASP or POWER. Good company perks. Salary: £5,000 neg.

Rachel Martin and June Mogg are here to give advice and keep you in touch with a variety of permanent opportunities.

### Contracts for Analysts + Programmers

IBM Analyst with knowledge of QPAC to maintain existing package.

IBM 3033 Systems Programming under OS/MVS.

IBM OS Cobol + Assembler programmer to commence April.

IBM Conversion from SYSTEM 3 to 34 RPG II Programmer.

IBM PL/I + Cobol with CICS. Team Leader for new on-line development.

IBM Cobol with TOTAL experience. Programmers for several locations start immediately.

IBM 3031 Systems Analyst for 6 month contract.

IBM OS Cobol with CICS/DTL Programmers for long term project.

ICL Cobol + VME/B Analyst/Programmers.

ICL COBOL VME/B + IDMS Programming. Expertise in this field is required for various projects in several locations in the UK and Overseas.

HONEYWELL Level 64 Major Commercial project starting soon, requires COBOL programmers with on-line experience.

HONEYWELL Level 66 Cobol programmers required for conversion project.

NIXDORF OR HONEYWELL Cobol programmers.

UNIVAC T182 under EXEC 8 programming work in Assembler.

PASCAL programmers to work on APPLE/ITT 2020.

These represent just some of the Contract Opportunities available. If you are looking for your next contract, on one months notice, or interested in entering the contract market for the first time, then speak to Richard Kaluzynski, Denise Fleming or Colin Cherry now.

## COMPUTER WEEKLY

Classified Department, Dorset House  
Stamford St, London SE1 9LU

Box Numbers: Should be addressed in the box number in the advertisement c. u. Computer Weekly at the above address

Classified Rates: £13 per column  
18 x 3 cols = £740, 39 x 3 cols = £1,250  
Half Page 18 x 7 cols = £1,300  
39 x 4 cols = £1,520  
Full Page 18 x 7 cols = £2,000.

Copy Deadline: 3.30 pm Monday prior  
Thursday publication date. Complete  
artwork up to 11 am Tuesday. Advanced  
space reservation is advisable.

#### LONDON

Assistant Classified Manager:  
Chris Prior 01-261 8028  
Mark Pulver 01-261 8087  
Ken Walford 01-261 8019  
Neil McDonnell 01-261 8004  
Vic Shaw 01-261 8008  
Doreen Smith 01-261 8054  
Ian Faux 01-261 8174  
Julie Hannaford 01-261 8002

#### MANCHESTER/GLASGOW

Owen Kelly 061-872 4211  
Geoff Aiken 061-872 4211

#### BIRMINGHAM/BRISTOL

Stan Harris 021-358 4828

## MYRIAD

### ADVANCED REAL-TIME DEVELOPMENT COMMUNICATIONS SYSTEMS

BERKSHIRE

SALARIES TO £10,000 + BENEFITS

We are recruiting a number of additional real-time Senior System Programmers/Team Leaders to enhance our client's Software Development Group, and to work on an exciting range of new projects.

The company can offer involvement in the following:

- \* Real-Time control software development
- \* Advanced communications systems design
- \* Project Team responsibility
- \* Packet switched networking
- \* Mini & micro-processor involvement
- \* Extensive training to the highest standards

If you can offer one (or more) of the following:

- \* PDP11, Macro-11
- \* RSX11-M
- \* Z80/8080 micros
- \* Micro-assembler
- \* Control software experience
- \* Data communications protocols experience

As part of one of Britain's most successful private organisations our client is the unchallenged leader in its field and is committed to extensive ongoing development in order to retain this enviable position. For the successful candidates, therefore, the rewards are high, including: excellent starting salaries, relocation expenses where appropriate, five weeks' annual leave, comprehensive pension and life assurance, real opportunities for progression and career development, and a salary review in June.

Ref: SW2/1104

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

### Training in Software for Assembler Programmers

UCC Software Products International

South London Salary £7,000 + Bonus

U.C.C. Software Products International provides a range of operating software products which are used by more than 2000 IBM users worldwide. The products include:

- U.C.C. 2 - The famous DUO (DOS under OS) conversion package.
- U.C.C. 1 - Tape Management System which interfaces with the UCC 15 Job Recovery Management System.
- U.C.C. 3 - Disc Management System which highlights DASD problem areas and helps correct them.

Full OS and MVS operating system and U.C.C. product training will be given, both by formal courses and on the job training. At least 1 year IBM ASSEMBLER experience is required preferably with OS/JCL gained in an OS environment.

Starting salaries will be c. £7,000 plus a bonus in the first year around £500. Other benefits include 4 weeks holiday, a season ticket loan scheme and subsidised restaurant. Relocation assistance is available if necessary.

Please telephone (24 hour answer service) or write to apply Quote Ref: CW119-J

**CAPP** Computer and Professional Personnel Consultants  
**ASSOCIATES LONDON and MANCHESTER**  
01-686 8693 AMP House, Dingwall Road, CROYDON CR9 2AU

#### THE POLYTECHNIC, WOLVERHAMPTON

The Computing Centre is being established as a separate service following the recent installation of a dual Pentium 800 computer system.

Applications are invited from men and women for the post of:

**HEAD OF COMPUTER CENTRE**

The successful candidate will have a minimum of 10 years experience of the computing discipline in an educational, industrial or corporate environment and will be expected to lead the development of the Centre's activities.

Salary: £10,261-£12,988 (scale 1-3)

For application form and further details contact the Personnel Officer, City of Birmingham Polytechnic, 4th Floor, 215, Broad Street, Birmingham B1 2DT. Tel: 021-359 9910 Ext. 2171

#### BRUNEL UNIVERSITY

The Computing Unit invites applications from experienced graduates and/or professionally qualified personnel for the post of:

**COMPUTING OFFICER POSTS**

There are requirements in the areas of:

Documentation Control and

Systems Programming

The University will be registering the successful candidate during the summer of 1980.

The Computing Officer posts are on the grade 1A scale (£4402-£8788 plus £1740 London Allowance).

For application form and further details contact the Personnel Officer, City of Birmingham Polytechnic, 4th Floor, 215, Broad Street, Birmingham B1 2DT. Tel: 021-359 9910 Ext. 2171

#### CITY OF BIRMINGHAM POLYTECHNIC FACULTY OF ENGINEERING AND SCIENCE

**MICROPROCESSOR APPLICATIONS RESEARCH ASSISTANT**

The successful candidate, who should have a degree or relevant professional qualification in Engineering or one of the Applied Sciences, will join an interdepartmental research team. He/she will be encouraged to register for a higher degree and will be expected to undertake some teaching. The appointment will be for 2 years.

SALARY SCALE: LECTURER 1: £5768-£8438

Further details and application form (to be returned by 28th April 1980) from The Personnel Officer, City of Birmingham Polytechnic, 4th Floor, 215, Broad Street, Birmingham B1 2DT. Tel: 021-359 9910 Ext. 2171

**Knight**

Phone anytime or fax an application form leaving your name and address with our answering service.  
**Knight Computer Services Ltd.,**  
14 Cold Park Lane, London W11 4TA

**01-491 4706**

**do executive (kingston) ltd**  
SEVEN STREET, KINGSTON UPON THAMES, SURREY KT1 1BW  
TELEPHONE: 01-549 6441-9

01-491 4706



# PRIME COMPUTER RESEARCH and DEVELOPMENT

We are growing very fast. Prime need highly-qualified designers for the computer products that will ensure our further growth in the 80's.

Prime are in the forefront of product development in the fields of networking, Communications, Transaction Processing and High-density Media.

We urgently need to hear from the following talented people:

**SENIOR  
SYSTEMS PROGRAMMERS**  
c. £10,500  
6 years + experience.

**SYSTEMS PROGRAMMERS**  
c. £8,750  
3-6 years experience.

**ASSOCIATE PROGRAMMERS**  
c. £6,500  
1-3 years experience.

These are all first rate opportunities for those who have experience of mini or main frame systems software and want rapid career advancement in a really good environment.

Salary scales go much higher than the average quoted. Free BUPA, a generous relocation package, Pension Scheme, free Life Assurance and preferential company stock purchase are all part of our comprehensive package.

Telephone Debbie Teague on 0234-65121  
or write to her at Prime Computer, Research and Development,  
The Merton Centre, St Peters St., Bedford MK40 2PN.

## MYRIAD

### ADVANCED DEVELOPMENT MANAGER

BERKSHIRE

Start circa £10,750

This position is an ideal opportunity for a skilled Senior Systems Engineer to accept the challenge of managing a team dedicated to the investigation and evaluation of new sophisticated technologies related to Data Communications.

The person appointed will need to be able to offer significant expertise in either DIGITAL NETWORKING or MAINFRAME COMMUNICATIONS. Additionally a proven background in MICRO-PROCESSOR TECHNOLOGY is essential since micros will continue to play an ever increasing role in new transmission systems. The successful candidate will need to be aware of general developments at the forefront of component and systems technology and will therefore attend conferences and exhibitions on the company's behalf, as well as paying occasional visits to the U.S. in order to keep up to date with progress there.

This is a senior position within the company carrying a high commencing salary. Additionally free BUPA cover, an excellent pension scheme with free life assurance, five weeks' annual leave and comprehensive relocation expenses, where applicable, ensure an attractive remuneration package.

Ref: SW1/1004

MYRIAD APPOINTMENTS LIMITED  
30 Fleet St London EC4Y 1AA Tel 01-353 0981 24 hrs

## Contract opportunities

Are you earning over **£13,000 p.a.**? Our contractors can earn in excess of £250 per week on short and long term assignments.

The following are examples of some of our latest projects. Ring now for further details.

Honeywell 66 GCOS Cobol TDS	SURREY
ANALYST/PROGRAMMER	MIDD.
IBM DOS PL1 CICS	VARIOUS AREAS
ANALYST/PROGRAMMER	LONDON
Honeywell Level 8 Cobol	MIDDLE EAST
SCREENWRITE ANALYST & PROGRAMMERS	SURREY
ICL 2900 VMEB Cobol	LONDON
ANALYST	FRANCE
IBM DOS VS CICS VS PL1	SURREY
SYSTEMS PROGRAMMER	LONDON
Systems 34 RPGII	VARIOUS AREAS
ANALYST/PROGRAMMER	GLOS
Foran/Avra Corp	
PROGRAMMERS & ANALYSTS	
IBM DOS PL1 Database	
PROJECT LEADER	
IBM DOS Cobol Assembly	
PROJECT LEADERS	
ICL 1600 Unipac Experience	
ANALYST/PROGRAMMER	
IBM DOS VS Cobol PL1	
PROGRAMMER	

01-734 0152 (24 hours)  
ROYALTY HOUSE, 72 DEAN STREET, LONDON W1



**Knight Programming  
Support Limited**

London • Manchester • Birmingham • France • Holland • USA

# NORTH CAROLINA

A major systems company situated in picturesque surroundings in North Carolina have requested us to supply a number of professionals on a twelve month assignment basis.

## Univac Systems Programmers

A thorough knowledge of operating systems Internals on either Univac 1110 or Univac 1182 machines is essential. Familiarity with datacommunication processors CSP or DSP will be advantageous.

## MVS Systems Programmers

A minimum of one year's OS/MVS (Internals) experience gained on one of the following machines is essential:- 370/168, 303X or Amdahl V7. Successful candidates will be familiar with TSO and TCAM or equivalent.

Earnings packages will be in the range of \$26k-\$32k per annum with a considerable tax advantage.

Initial interviews will be held in London, Birmingham and Manchester during April.

Please contact Cathy Walsh on 240 2441  
for further information

**Computer People  
International**

VLI House 68-69 St Martin's Lane  
London WC2N 4JS

01-836 8411

01-240 2441

Recruiting specialists

Vilgroup

I am interested in contract work in North Carolina.

Name

Address

Tel. (Day)

Tel. (Ev/Wk)

240 2441



# ENGINEERS

**CUSTOMER ENGINEERS - IBM 370/168, ICL System 4 DEC PDP 11.** If you are trained on any of these you could be worth more than you think! All positions based in London or home counties.

**TECHNICAL SUPPORT ENGINEER** - Sound mini experience is required for this position with a prestigious manufacturer-based in West London.

Salary to £8,000 + Car + Allowance

**MINI SYSTEMS ENGINEERS** - Expanding manufacturers urgently require engineers to work in central and outer London.

up to £7,000 + Car + Allowance

**TEST/REPAIR COMMISSIONING ENGINEERS** - Required by large mini manufacturer with bases in London and home counties.

Good salary and career prospects.

Please telephone (24 hour answer service), return coupon or write to apply Quote Ref: CW120-C

**CAPP ASSOCIATES**  
01-686 9693

Computer and Professional Personnel Consultants  
**LONDON and MANCHESTER**  
AMP House, Dingwall Road, CROYDON CR9 2AU

Coupon - please return for immediate action. Complete:

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone Numbers: \_\_\_\_\_

Home \_\_\_\_\_

Office (Used discretely) \_\_\_\_\_

Present Position: \_\_\_\_\_

Length and type of experience: \_\_\_\_\_

## NORTH WEST THAMES REGIONAL HEALTH AUTHORITY COMPUTER CENTRE SENIOR SYSTEMS DESIGNER (TEAM LEADER) - 2 POSTS SALARY SCALE £7430-£8949 INCL. LONDON WEIGHTING

The Authority wishes to appoint two systems analysts with managerial ability and experience to lead teams of analysts and programmers. One team is responsible for all Accounting systems, the other for providing an information service to Personnel, Manpower Planning and Management. Accounts Users in the Region. Database experience, although desirable, is not essential as appropriate training will be given. The Regional Computer Centre is a modern purpose-built self-contained unit standing in its own grounds in Colney Hatch Lane, New Southgate, London N11. The Centre is equipped with a large ICL 1904S supported by document readers, Redifon key to disc systems and NCR microfiche processor. COBOL has been adopted as the installation standard language. In addition a wide variety of mini computers are installed around the Region. There are good working conditions, a 36 hour week, 23 days annual leave plus 2 days additional to the usual Public Holidays, and canteen facilities. Further details and application form may be obtained quoting ref. no. 618/CW, from the Regional Personnel Officer, North West Thames Regional Health Authority, 40 Eastbourne Terrace, Paddington, London W2 3QR (Telephone No. 01-262 8011 Ext. 281). Closing date 25th April, 1980.

## Career Opportunities with COMMODORE

PET is Britain's (and Europe's) No. 1 microcomputer. Commodore are committed to expansion and are looking for hard-working and resourceful people to help us market a new generation of computer products during the 80s.

We are looking particularly for people with experience in these fields:

**SALES**  
**MARKETING**  
**BUSINESS SOFTWARE ANALYSIS**  
**COMMUNICATIONS** (networking and intelligent terminals)  
**TECHNICAL SUPPORT**  
**REPAIR LINE SERVICE** (including supervisor)

For further information, please write enclosing a CV to:

**YVONNE RYAN**  
**COMMODORE BUSINESS MACHINES (UK) LTD.**  
818 LEIGH ROAD, SLOUGH, BERKS.

## UTR SYSTEMS LIMITED

DUE TO EXPANSION WE REQUIRE EXPERIENCED

### SENIOR SYSTEMS ANALYSTS

£6,200-£7,600

### ANALYST/PROGRAMMERS

£4,800-£6,000

### SENIOR PROGRAMMERS

£4,300-£5,300

To work on commercial and technical systems. Currently providing batch and on-line systems for companies within a large U.K. group, using IBM 370, running DOS/VS and Shadow. Changing to IBM 4341 in 1981.

The main programming language is Cobol but experience in RPGII and PL1 would be advantageous.

Applications giving full personal and career particulars including salary progression to:

THE DIRECTOR  
**U.T.R. SYSTEMS LTD.**  
COMPUTER CENTRE, GOODLASS ROAD, SPEKE, LIVERPOOL L24 9HJ

## SMR Technical Support People Ltd

Victory House, 99 Regent Street, London W1R 7HB

A Sales and Marketing Services Company  
London & Midlands

## TECHNICAL SUPPORT MANAGER

### MANAGEMENT INFORMATION SYSTEMS LONDON

Our client is one of the world's leading computer companies providing a wide range of timesharing based Management Information Systems within such areas as

**FINANCIAL MANAGEMENT** **PERSONNEL ADMINISTRATION**  
**MARKET RESEARCH** **DATABASE MANAGEMENT**

We are seeking a senior computer professional with experience of both project control and man-management, related to business applications, preferably within a computer services organisation and ideally related to timesharing facilities.

Irrespective of background, candidates must have the ability to thrive within a service oriented environment, providing support to both the company's clientele and its sales operation.

Responsibilities will include the management of a team of analyst/consultants, identifying new application areas, designing new systems for prospective and existing clients, creating systems and programming standards, business planning and the training, development and targetting of team members.

The job is located in CENTRAL LONDON and the company expects to pay an income package of

**Circa £10,000 + Company Car**

Please supply complete career details to Jaki Whyte or Caroline Connabeger quoting reference JGT004.

Tel: 01-734 9776

Answering service after 6pm and weekends 01-437 8228.  
TRAINING, ASSESSMENT, RESEARCH, RECRUITMENT

**JBA**

## MVS Systems Programmers

**S. Germany £24,000 - £29,000**

Our client is a German systems house which is currently expanding its operations in the large systems software market. Candidates with over 3 years experience of maintaining large IBM operating systems - including MVS - will be considered for either permanent or fixed-term employment. Knowledge of the German language is not essential.

Of particular interest to German companies are software specialists with knowledge of the internals of IMS, JES 3 and CICS and naturally anyone who has significant experience of setting up SNA software can be assured of high earnings - perhaps even more than salaries quoted above.

Contact: Andy Wright

## Micro - Software Sales

**London Based Earnings c. £18,000 + (+ CAR etc.)**

Our client is beginning to acquire an outstanding reputation throughout the commercial d.p. world for the innovativeness and flair of its software products. Their aim has been to make the micro easy and flexible to use in an interactive commercial environment - and there is no doubt that they have succeeded.

Opportunities exist in the company's Sales and Marketing team for professional, successful sales personnel who can sell worldwide. At present, the vast majority of their sales are made to the USA and Europe and the directors wish to see this trend continue - experience of working in non-UK markets is therefore particularly welcome.

Contact: Andy Wright

## CODASYL Database Design

**Amsterdam c. £18,000 + Car + benefits**

A small, specialist Dutch company has several requirements for experienced database Designers and Analysts to work on new, advanced development projects. Duties will range from corporate systems strategy studies, through to technical design and project management so obviously candidates must have at least 7-10 years d.p. experience in all. Foremost technical expertise must be a database design - e.g. DMS90/1100, IDMS, IDSII, DMIV etc. and should include sound T.P. and on-line systems design.

Applicants without project or team management experience are acceptable but will be expected to possess extremely good technical knowledge.

Contact: Andy Wright

## Bureau Sales

**West Yorks Earnings of c. £10,000 + Car**

A large organisation offering a comprehensive range of bureau services, on main frames and micro computers, requires an additional person to join an established sales team.

Applicants should have a sound computing background and a professional attitude.

Previous experience of sales in the computing industry is essential.

Contact: Bev Stevens

## Project Manager

**Rural Midlands neg. to £9,000**

A multi-national engineering company is seeking a Project Manager to be responsible for design, development and implementation of a new "worldwide" engineering system. The system will utilize database, and communications technology and the work will involve international travel.

Applicants should be computer professionals with the ability to manage people and projects. A background in engineering systems and IBM main frame experience is preferable.

A stimulating project opportunity with excellent scope for future development.

Contact: Bev Stevens

**JAMES BAKER ASSOCIATES,**  
International Personnel Consultants,  
32 Savile Row, London W1.  
Tel: 01-439 9311.

## ANALYSTS AND PROGRAMMERS to £7500

Our clients, a major organisation in the Aberdeen area, require commercial Systems Analysts and Programmers as part of current expansion.

### ANALYSTS (3)

To work in project teams - minimum of 2 years' experience - salaries dependent upon this experience and ability.

### PROGRAMMERS (2)

The Company require candidates with proven expertise in Cobol, however, experience of other commercial applications languages may also be of interest. Salary levels will be determined by length of experience gained.

New systems are being designed, database being introduced and new hardware has already been installed. A clear career path will be aided by a substantial salary review in May. Relocation and normal large Company benefits are offered by our clients, who are situated in a pleasant area of the city.

For further information, and to arrange a location interview, telephone DAVID HICKS on 031-225 2711 or 031-226 5969, or write enclosing a detailed CV to:  
**DML COMPUTER PERSONNEL SERVICES**  
11 Charlotte Square  
Edinburgh EH2 4DR

Please quote reference number CP/82/E

## ANALYST/PROGRAMMER

**SIMULATION LEEDS**

£6,771 p.a. - £9,211 p.a.

The North Eastern Region of the Central Electricity Generating Board designs Real Time Operator training simulators of power station plant at their premises in central Leeds. The simulators are for installation in Electricity Authorities both in the United Kingdom and throughout the world.

**IF YOU HAVE:**  
A sound working knowledge of FORTRAN.  
The ability to communicate effectively with engineers of other disciplines.  
A broad interest in engineering.

**WE ARE OFFERING:**  
"Hands-on" operation of a large mini-computer.  
Opportunities for home and international travel.  
The opportunity to broaden your knowledge and experience.  
The opportunity to develop your own ideas from concept to implementation.

**HOW TO APPLY:** Please telephone for an application form or write giving brief details of qualifications, experience and salary to:



CENTRAL ELECTRICITY GENERATING BOARD - NORTH EASTERN REGION

## Computer Manager

£10,000+

Our client is a major timber importer, with a number of subsidiary companies spread over the UK and overseas. Plans for installing large minicomputers with teleprocessing links to depots in the main operating companies, are at an advanced stage. The first site will be in Newcastle where initial development work will be done.

A Computer Manager is required to take responsibility for the implementation of the systems and will become resident at a site until the system is commissioned and the operating can then be handed back to local management. Implicit in this approach is that sites will be mechanised consecutively, and the project will take a number of years to complete. At the end of this time the manager will become the Group Systems Co-ordinator, a post which will be of considerable importance.

The post calls for a person with proven experience in creative management in data processing, who is prepared to spend long periods in different parts of the UK. The salary is negotiable and will reflect the calibre of the post. A car will be provided.

This appointment is open to both male and female candidates who should send adequate particulars initially, in confidence, to Mr P. R. Billingham at:

Spicer and Pegler Management Consultants  
3 Bevis Marks  
London EC3A 7HL



## ADVANCED TECHNOLOGY — DOS/VSE — State of the Art

## ★ LONDON

## ★ SOUTH BUCKS

## ★ MUNICH

## ★ ZURICH

This independent software company's ability and track record in designing, manufacturing and marketing their own products, has resulted in an international reputation in a world-wide market-place.

The company are offering a range of opportunities to high-calibre professionals with drive, ambition, enthusiasm, and a flexible approach to technical problems. Most of these posts involve customer contact and travel, some overseas, and all offer excellent income packages and outstanding career prospects. In general, candidates will have some knowledge of IBM-DOS/VSE and will have had a systems programming or operational background.

### TECHNICAL SERVICES MANAGER SOUTH BUCKS — c. £10000 + Car

### PROGRAMMING MANAGER SOUTH BUCKS — c. £11000 + Car

### SENIOR TECHNICAL CONSULTANT SOUTH BUCKS — £7000 to £9000

### DEVELOPMENT PROGRAMMERS SOUTH BUCKS — £5500 to £9000

### TECHNICAL SUPPORT ENGINEERS LONDON — £5000 to £9000

### FIELD SUPPORT ENGINEERS LONDON — to £8000 + Car

### MUNICH — to £16000 + Car

### ZURICH — to £16000 + Car

### SALES REPRESENTATIVES LONDON BIRMINGHAM up to £12000 + Car

★ Sound understanding of DOS, DOS/VSE internals.

★ Good experience of IBM Assembler and DOS, DOS/VSE internals.

★ Leadership qualities.

★ Sound understanding of DOS, DOS/VSE.

★ The capability to advance towards management.

★ Good experience of IBM Assembler and DOS, DOS/VSE internals.

★ Sound understanding of DOS, DOS/VSE internal knowledge with in-depth JCL techniques.

★ Experience in problem determining and solving.

★ Sound understanding of DOS, DOS/VSE JCL and software maintenance techniques.

★ Ability to communicate with users at all levels.

★ Experience of selling D.P. products and/or services.

★ DOS, DOS/VSE knowledge.

★ Relocation packages are available where relevant



**Information Processing People**

58 Pembroke Road, London W8. Telephone (24 hours): 01-603 7335/6. Telex: 261298

1354

### OWNER/ANALYST

The small to medium sized manufacturing company is seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### PROGRAMMER

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OWNER/ANALYST

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

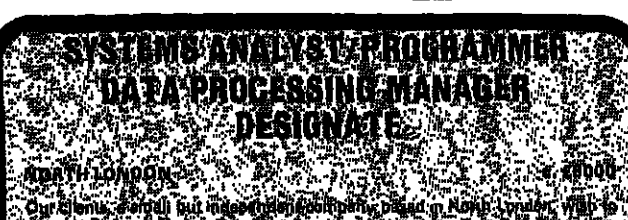
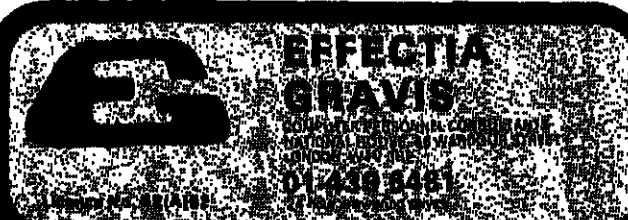
The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### OPERATOR

The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

### KEY TO DISC SALES EXECUTIVE WHERE ARE YOU?

Our client is a small company with a growing business in the field of computer hardware and software. They are seeking a person with a minimum of 5 years' experience in the field of computer hardware and software sales. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.



The company are seeking a person with a minimum of 5 years' experience in the field of IBM-DOS/VSE programming and systems programming. The successful candidate will be responsible for the design, development and testing of new systems and for the maintenance of existing systems. The successful candidate will also be responsible for the training of staff and for the supervision of the work of other staff. The successful candidate will be offered a competitive salary and a comprehensive benefits package. For further details, please contact the undersigned on 01-603 7335/6.

Complete the coupon and return to Effectia Gravis, National House, 66 Wardour Street, London, W1V 3HP, for your next PERMANENT or CONTRACT job.

(BLOCK CAPITALS PLEASE)

Name (in full) \_\_\_\_\_

Address (Permanent) \_\_\_\_\_

Telephone Home \_\_\_\_\_ Office \_\_\_\_\_

Type of Transport \_\_\_\_\_ Date of Birth \_\_\_\_\_

Current Position \_\_\_\_\_

Salary Rate \_\_\_\_\_

Position Required \_\_\_\_\_

Salary Rate \_\_\_\_\_

Notice Required \_\_\_\_\_ Data Available (date) \_\_\_\_\_

Areas Preferred First Choice \_\_\_\_\_

Second Choice \_\_\_\_\_

Experience to date (Last Position First) \_\_\_\_\_

Company Name \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_

and Location \_\_\_\_\_ Mth Year \_\_\_\_\_ Mth Year \_\_\_\_\_ Duties and experience \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

THIS ADVERTISEMENT WILL INTEREST BUILDING SOCIETY EXECUTIVES WITH EXPERIENCE IN ANY OF THESE DISCIPLINES: MANAGEMENT SERVICES, COMPUTING, O&M, R&D, OR OTHER AREAS OF ADMINISTRATIVE DATA PROCESSING.

## ACCOUNT MANAGER — BUILDING SOCIETIES

BASED IN LONDON, THE POSITION CARRIES AN INCOME PACKAGE OF CIRCA £18,000 (PRESENT INCOME GUARANTEED AS A MINIMUM), A COMPANY CAR AND USUAL BIG COMPANY BENEFITS.

**JOB CONTENT**—To control our Client's marketing efforts into a specific portfolio of accounts, mainly comprising Building Societies and to offer these Companies computer based solutions to administrative problems peculiar to their Industry.

**THE COMPANY**—A large multi-national Organisation and one of the world's leading manufacturers of computers and peripheral equipment, specialising in distributed data processing techniques.

**CANDIDATE PROFILE**—We are looking to recruit from a Building Society environment because our Clients take the view that to successfully negotiate multi-million pound contracts with large Building Societies, one needs to have an in-depth Building Society background linked with administration or data processing. In short, credibility is established by having the experience to readily identify administrative and data processing problems peculiar to the Industry.

**THE REWARDS**—We appreciate this could be a radical change in direction for the successful candidate. However, we feel the incentives to be tangible and considerable. One immediately benefits from an effort/reward ratio which is the fundamental incentive of marketing. One is also involved in the vanguard of computer technology in relation to answering administrative and data processing problems related to the Building Society Industry. It also offers a move to a more dynamic environment and the opportunity for rapid progress and truly substantial earnings.

Our Clients appreciate that the successful candidate is likely to be well remunerated at present. They are therefore prepared to guarantee that as a minimum, current incomes will be maintained during the intensive training period. In addition, they offer the potential for the successful to earn £18,500 on quota and considerably more if this is exceeded.

THIS TYPE OF OPPORTUNITY SHOULD APPEAL TO YOUNGER EXECUTIVES LOOKING TO BROADEN THEIR HORIZONS. INTERESTED CANDIDATES SHOULD CONTACT BOB BOWER, ADVISING DIRECTOR FOR FURTHER INFORMATION.

REF: CW/0304

**HUTTON EXECUTIVE SELECTION LTD.**  
**HUTTON HOUSE,**  
**HUTTON STREET, LONDON EC4Y 8HR**

**TELEPHONE: 01-353 7141 (24 HOURS)**

# Hutton

SPECIALIST RECRUITMENT CONSULTANTS

contracts for programmers and analysts

## Computer People North

VLI group

### North West:

Ring 061-491 1666 or mail the coupon.

IBM PL1 OS Programmer with Michael Jackson programming experience — long term contract  
IBM Systems Programmers under OS (for package evaluation)  
IBM Mk IV Programmers  
IBM COBOL CICS DL1 DOS VS Programmers  
Univac 1100 ASSEMBLER to FORTRAN Programmers  
HONEYWELL L66 Programmers — all levels  
MICRO Programmers with ASSEMBLER experience  
Systems Analysts with good commercial experience — urgent

The above contracts are immediate and on-going so, if you are considering taking a contract assignment in the near future, phone now for further information.

### Scotland:

Ring 0532-34941 or mail the coupon.

**IBM CONTRACTS**  
Immediate starts for OS CICS Systems Programmers and COBOL IMS Programmers.  
**DEC CONTRACTS**  
PDP RS11XD Systems Programmers required for central region.

### North East:

Ring 0532-34941 or mail the coupon.

### IBM CONTRACTS

Immediate starts for good ASSEMBLER CICS Programmers, OS Systems Programmers and PL1 and ASSEMBLER Maintenance Programmers.

### HONEYWELL CONTRACTS

Long term contract for COBOL Programmers with six months or more L66 experience

### BURROUGHS CONTRACTS

ALGOL Programmers with large systems experience required in the near future.

Please provide information about contract assignments.

North West ☐ North East ☐ Scotland ☐

Name \_\_\_\_\_ Tel No \_\_\_\_\_

Address \_\_\_\_\_ (Day) \_\_\_\_\_

(Ev/Wkd) \_\_\_\_\_

Mail (no stamp) to FREEPOST, COMPUTER PEOPLE NORTH, Sovereign House, Stockport Rd, Cheshire, SK6 2YD

0532-34941



**CONSULTANTS**

**CENTRAL LONDON**  
£3,500 to £14,000  
4 large, well-established consultancies wish to recruit systems people with all-round experience on third generation equipment and the right personality to deal with clients who require first-rate service. Technical Communications Consultants are also required where in-depth implementation experience of IBM or DEC latest ranges are essential. Excellent fringe benefits and prospects. CW15/1

**SHIFT LEADER**

**MR. HEATHROW** to £6,500  
This large commercial company requires a shift leader with 3 yrs + IBM OS/VS1 experience for their 370 installation (converting shortly to a 4341). Supervisory skills are essential and there will be involvement in staff training. There is a 3-shift system. Working conditions are pleasant and company benefits excellent. CW15/2

**OPERATOR**

**C. LONDON** TO £5,000  
If you have 1 yr + PDP II experience, then this might be the job you are looking for. The above company require your services on their PDP 11/34 and 36, soon converting to an 11/70. There is a 4-shift system. Good company benefits are offered, and an added perk is its central situation. CW15/3

**CONTRACT PROGRAMMERS**

**U.K. AND OVERSEAS** TO £40 P.W.  
S/A IMS 90 PROD. CONTROL. BERKS. 3 MTHS + IBM CICS COBOL. SUSSEX. 3 MTHS + SYS 3 AN/PROG CCP. SUFFOLK. 3 MTHS + PDP CORAL 66 W. LONDON. 3 MTHS + DOS/VS CICS POWER. KUWAIT. 6 MTHS SYSTEMS PROG. OS/MVS. HOLLAND. 6 MTHS ICL IMS SYS. ANALYST. HOLLAND. 12 MTHS L86 TPS IDS FRENCH FRANCE. 6 MTHS

**PL/VACANCIES**

**LONDON & HOME COUNTIES**  
£5,500 to £11,000  
We have a number of positions ranging from Programmer to Project Leader with both small and large commercial companies. Locations are the CITY, BROMLEY, BRENTFORD, CHATHAM, HIGH WYCOMBE, REDHILL, SLOUGH, ENFIELD, SOUTHALL and COCKFOSTERS. Perks often include mortgage and removal assistance. CW15/4

**OPERATOR/SHIFT LEADER**

**BUCKS.** £6,000  
If you don't like working in London then read on. This Bucks. company requires an ICL 1900 or 2900 operator and a shift leader with 2 yrs' experience for their twin 2960 installation, working under 3 shifts. Usual large company benefits. Ring now. CW15/5

**SUPERIOR SALESMEN PLEASE****MINI SALESMEN**

**QUOTA EARNINGS** £15,000  
**HOME COUNTIES** + 2-LITRE CAR  
A very successful American mini manufacturing and marketing organisation (over 300 salesmen in the States) has recently set up shop in this country. They have an excellent product with top-grade support serving the total DP needs of small and medium-sized companies and having comprehensive timesharing and multiprogramming capabilities. So join the trailblazers now and grow with this company. CW15/6

**COMPUTER SALESMEN**

**LONDON, N. HOME COUNTIES & BIRMINGHAM**  
**QUOTA EARNINGS** £14,500 + CAR  
Do you like selling the best? This British company markets a small disc-based American computer system which is amongst the fastest sellers in the U.S.A. With several hundred installations in the £12,000 to £30,000 range in the U.K. and a substantial growth rate, your prospects for both earnings and advancement are excellent (for instance a promotion in the North has created one of these vacancies). Top salesmen apply now, join their Non-CPS and obtain a 1600 c.c. car for your sales territory and really go places. CW15/7

**MINI COMPUTER SALESMEN**

**SALES AREA—U.K.**  
**QUOTA EARNINGS** £18,000 + CAR  
Join a company really going places where over half their salesmen earned £16,000 last year. Their products are amongst the most advanced interactive DP systems in the world, having a nine-fold increase in performance across their range of CPUs. They also offer a very efficient range of compilers and operating systems. Vacancies exist in CENTRAL AND WEST LONDON, BERKSHIRE AND MANCHESTER with basic salaries between £7,000 and £8,000. CW15/8

**SALES SUPPORT**

**LONDON, MIDLANDS AND HOME COUNTIES** TO £9,000 + CAR  
We have four MINI computer manufacturing companies with offices around the country who require people with the confidence to deal with clients in a pre- and post-sales situation. All vacancies require a programming background on minis and the jobs will provide an exciting and satisfying career. CW15/9

**UCU** Recruitment Consultants  
**UNIVERSAL COMPUTER ASSOCIATES LIMITED**

**01-995 3883 (01-958 6138 Evenings)**  
Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W.4

**AVIONICS—SCIENTIFIC PROGRAMMERS**

**SALARIES £6,000-£12,000**  
**LONDON/HOME COUNTIES/SOUTH**

We have a large number of openings for people with scientific or avionics expertise. These opportunities are wide and varied and some involve a proportion of overseas travel. Candidates should hold a degree in a scientific discipline and have experience in some of the following areas:

**SOFTWARE DESIGN \* REAL TIME MINI/MICRO SYSTEMS \* AVIONICS & DEFENCE SYSTEMS \* ASSEMBLY LEVEL LANGUAGES \* FLIGHT SIMULATION \* MATHEMATICAL MODELLING**

These appointments are placed throughout the above locations and all are with reputable established companies. For further details please contact Mike Howard.

**COBOL PROGRAMMERS AND ANALYST PROGRAMMERS**

**to £9,000**  
**LONDON & HOME COUNTIES**

A leading computer manufacturer requires programmers and analyst programmers to become involved with software validation and application packages.

**IBM PROGRAMMERS COBOL PL1 ASSEMBLERS**

**SOUTH LONDON/SURREY, to £8,000**  
Computer users environment. We have a number of companies currently seeking programmers with experience in any of the above languages. Although these companies may have similar technical requirements they are remarkably different in character. All have excellent working conditions and the usual benefits associated with large companies can be expected. For further details please contact Eddie Howard.

**SYSTEMS PROGRAMMERS TECHNICAL AUTHORS**

**SALARY TO £12,000**  
**HOME COUNTIES**

Here is an excellent opportunity for technically minded individuals with an interest in either systems programming or technical writing. One of the country's leading computer manufacturers is now recruiting additional personnel to meet the demands of a rapidly expanding section of the industry.

**PROGRAMMERS** with a minimum of two years' technical experience will be involved in a variety of projects ranging from software design and development through to final testing and implementation prior to general release.

**TECHNICAL AUTHORS** with some previous experience in the production of technical specifications and software manuals will be required to work in close association with both software design and product test teams. Applicants should be prepared to tackle and solve all manner of problems and maintain a high standard of documentation at every stage. Rapid career advancement is envisaged for those with the right background, qualities and experience. For further details please contact Mike Howard.

**Edmund Howard & Partners**

5 Brighton Road, Surbiton, Surrey, England Tel: 01 399 9183

**Excellent Contract Opportunities**

In line with our rapid growth rate we have a continuous requirement for skilled and dedicated professional contract staff.

**Mark IV Analyst/Programmers**  
**USA, West Africa, Germany and UK**

**IMS DB/DC Expertise**

**London, Home Counties**

**Assembler CICS or VTAM expert** **Essex**

**Cobol/CICS Analyst/Programmers**

**London, Home Counties**

**DOS/VS Systems Programmers** **Middle East**

**Systems 34 Analysts Programmers** **City**

**Univac 1100 Analyst/Programmers**

**London, Essex**

**RPG Senior Programmers** **Essex**

**PL1 Analyst/Programmers**

**London, Home Counties**

**IBM Cobol Analyst/Programmers** **London, Home Counties**

**Redifon R850 Analyst/Programmers**

**Middle East, London**

**HP 3000 Expert** **London**

**Micro Assembler Programmers** **London**

**IBM Consultant** **Middle East**

For more information telephone (020)

**Alan King**  
**TANGENT COMPUTER SERVICES**  
1A Eastern Road  
Romford, Essex  
Tel: Romford 44181/2 28238

**Software Engineer****There's something brewing in process control**

At Scottish & Newcastle Breweries Limited we have been making major advancement in process control with Intel Microprocessors supported by two M.D.S. Intellect Systems.

The scale of our brewing operation — 4 major brewing centres in Edinburgh, Newcastle and Manchester producing large volumes of our McEwans, Youngers, Newcastle and Harp ale and lagers — presents massive scope for plant systems development.

Taking up this challenge is our Group Automation Team of electronics, automation and software engineers operating from Edinburgh. To strengthen this team we require a Senior Software Engineer who will specialise in software design and maintenance using high and low level languages.

You should be innovative, hold a degree or HND in computing science or allied subjects and have 3-5 years' programme writing and micro-computer application experience within a real-time environment.

The Job's rewards will include a salary of around £7,500, excellent non-contributory pension and life assurance scheme, free beer allowance, generous holiday concessions and substantial assistance with re-location costs where applicable.

If you are interested, please telephone or write to Mr. G. W. Cuthbert, Personnel Officer — Recruitment, Scottish & Newcastle Breweries Limited, 160 Canongate, Edinburgh EH4 8DD. Tel: 031-566 2691 ext. 2806.

Scottish & Newcastle Breweries Ltd.

**SMR**

**Sales & Marketing Recruiters Ltd**  
Victory House, 93 Regent Street, London W1B 7JH  
A Recruitment Specialist Company

**SALES EXECUTIVES**

Come to us now for tomorrow's retrospective wisdom.

Sales and Marketing Services is unique in its ability to provide facilities for Sales Training, Market Research and Psychological Analysis as well as the Recruitment of sales and sales support personnel. We have the skills to provide careers guidance for sales and marketing personnel as well as having access to all the major computer organisations. Thus we are ideally equipped to find the right jobs with the best companies.

Come and speak with us soon.

TRADER

Tel: 01-734 9776

Answering service 9.00 am and evenings 6.00 pm. (01-734 9776)

**PROJECT LEADER**

**N. SURREY** 5-6 years' analysis + supervisory exp. **£10,000**

**PROJECT LEADER** 5 years' analysis + managerial exp. **C. £9,500**

**SENIOR ANALYST** 3+ yrs' system analysis exp. **C. £8,600**

**PROGRAMMER/DESIGNER** PL1 exp. Data Database **£8,500**

**SENIOR PROGRAMMERS** 5 yrs' Cobol prog. exp. **£8,500**

**ANALYSTS** 2/3 yrs' analysis exp. **£8,500**

**SENIOR ANALYST** 2 yrs' commercial systems and managerial exp. **£8,400**

**SENIOR ANALYST** 2 yrs' commercial systems and managerial exp. **£8,400**

**SYSTEMS ANALYST** 2 yrs' commercial analysis exp. **£7,500**

**SYSTEMS DESIGNERS** Cobol prog. + analysis exp. **£8,000**

**ANALYST/PROGRAMMERS** 1/3 RPG 2 exp. **£7,500**

**RPG 2 PROGRAMMERS** GUILDFORD AND CAMBERLEY

Please write with full details or phone for an application form

**AMES PERSONNEL**

Employment Agency Suite 14, Dryden Chambers, 119, Oxford Street, London, W1R 1PA Tel: 01 434 1106

**ISLE OF WIGHT****PROGRAMMER**

with at least 2 years experience of DEC PDP equipment required for expanding installation at local bus company. Opportunity for some system work, with possibility of upgrading after completion of satisfactory trial period. Starting salary c. £4500.

Application forms and further details may be obtained from:—

**G. V. R. Batchelor, FCCA**  
Company Secretary

**SOUTHERN VECTIS OMNIBUS CO. LTD**

Nelson Road, Newport, Isle of Wight PO30 1RD  
Telephone: Newport 10W (0483) 522488

**Gwent college of higher education****Senior Computer Technician (Programming)**

Applications are invited for the above post in the Gwent College of Higher Education. The successful candidate will be required to be responsible for the design, development, programming and maintenance of mainframe and micro-computer systems. Programming experience is needed in BASIC, COBOL and, preferably, other high level languages. Salary Scale: £9,418-17,400, 2000 hours per annum. For application form, see advertisement in the Gwent College of Higher Education, College Campus, Gwent, NP23 5TA. The closing date for applications is 15.04.80. Applications should be sent to the Principal, Gwent College of Higher Education, College Campus, Gwent, NP23 5TA.

**THE SALES BIT****Make sure the customer can afford his order**

EARLY in my sales career I was employed as a main-frame computer salesman with IBM in the Midlands, selling to the manufacturing industry.

One of my first major sales involved a firm whose primary problem was the need of a system to give it more effective control over accounting and warehouse stock.

My negotiations with the managing director were progressing nicely and, during the course of conversation, I also introduced areas of my employer's expertise related to production, engineering and scientific applications.

Much to my satisfaction the MD reacted very positively and said it would be a good idea if our feasibility study also took account of whatever requirements also existed in those areas.

So, off I went. The technical director was very enthusiastic and described to me a wide range of, what were at that time, totally incomprehensible applications where computers could make a considerable contribution to the efficiency of their design and analysis activities. Structural analysis and design, statistics — I was very impressed.

I was even more impressed having spoken to some of their engineering management. Their cumulative potential requirements were very significant indeed! I then met the production director who told me about his plans for a production control system which he intended to integrate with whatever stock control system was put into operation. Machine shop scheduling, bill of materials processing — I found the potential somewhat overwhelming.

I could hardly believe my luck. What I had been told by my sales manager was a good prospect for a medium-scale accounting system was in reality an excellent prospect for an integrated large scale computer complex.

One of the crucial aspects of proposing a computer system is designing or configuring a particular permutation of devices which will be able to handle the immediate workload and the estimated requirements over a given timescale.

I could hardly believe the size of computer needed to handle the total workload. I had one of my colleagues check it out and, other than slightly modifying the configuration, he was in agreement with my specification and costing.

So that was that. I then proceeded to compile the facts in a formal sales proposal ready for the final presentation.

Unfortunately, as a standard procedure, I was obliged to present the proposal to my sales manager first. It went pretty well and I felt a small glow of pleasure as I saw a look of interest creep over his face.

Now he can see what a brilliant salesman I am! I thought, "I've managed to expand this prospect far beyond what he thought

was possible." I was right! "Hang on a bit," he said as I meandered through the data storage implications of "parts explosion". "How much is all this lot going to cost?"

I resisted the temptation to say "But I haven't finished yet!" and gave him what I thought was a very impressive total figure.

"You idiot!" he said. I experienced total confusion. "What makes you think they'll pay that kind of money?" I explained the tremendous enthusiasm of the various members of the prospect's senior management and how the managing director had been most encouraging.

My manager was not impressed. "Did you ask them about the size of their budget?" No, I hadn't — "Or let them know how the

**Feasibility studies, Part 1**

configuration and therefore the cost was growing as the feasibility study progressed?" No, I didn't think it necessary.

I won't bore you with the ensuing barrage of questions, each of which made my stupidity more apparent. As it happened, the outcome was not as disastrous as it might have been.

My manager had taken the precaution of discovering the maximum amount the client was prepared to pay, which must have been about £100,000. My euphoric solution was never half a million!

As a result of this object lesson, I was able drastically to rationalise the system and deliver a proposal that was somewhat more appropriate.

Thank goodness for a perceptive sales manager. At least the "egg-on-my-face" was limited to my own department rather than the client's board room.

TRADER

**Scots branch**

INDEPENDENT supplier of minicomputer disc systems, System Industries (Europe), of Woking, Surrey, has opened a Scottish support and maintenance office. The new facility is located at the Edinburgh Regional Computing Centre, Mayfield Road, Edinburgh 8.

**Microdata agent**  
AN overseas distributor, C. N. Rood BV, of Rijswijk near The Hague, has been appointed by Microdata of Radlett, Herts. The Dutch company has an exclusive franchise for sales and service of Microdata portable data logging terminals throughout the Netherlands.

**Puzzle Answer**

THE basic technique is 15-12, 15-13, 2-11, 2-4, 14-7, 14-8, 3-10, 3-9, 1-6, 1-5.

spelling 150



An international team is being created by our Clients to develop systems based on a network of over 30 IBM SYSTEM 34s (plus SYSTEM 38s on order) requiring world-wide implementation within 12 months.

Our Client is a multi-national organisation serving the needs of business.

government and other institutions by providing products and services which facilitate the recording, communication, retention and retrieval of business information.

Their aggressive expansion policy envisages worldwide growth and the potential for successful applicants includes D.P. Management of independent installations.

Please contact **TONY HATHERALL** for an early interview and further information.

### Computer People South

VLI House 68-69 St Martin's Lane  
London WC2N 4JS

01-240 2441

Recruiting for clients

VLIgroup

TH/77/CW10/4

**ATCOST**

### IBM SYSTEM / 34 RPGII PROGRAMMER

ATCOST - The country's largest manufacturer of precast reinforced concrete frames. Situated in an historic part of Tunbridge Wells.

The Hardware - IBM System / 34 with local and remote VDUs C.A. Naked Mini controlling Benson Plotter.

Computer Systems - All the financial applications have already been installed. Planned areas for computerisation include stores, estimating, and asset register to name but a few.

Our requirements - At least 12 months' RPGII and System/34 experience. FORTRAN knowledge would also be an advantage but is not essential.

Salary - Negotiable plus excellent pension and sickness benefits and profit sharing scheme.

The Contact:  
J. C Lowe, MBS, Data Processing Manager  
Atcost Limited  
51 The Pantiles, Tunbridge Wells  
Kent TN12 5TH  
Tel: 0692 26288

(472)

### ROCHESTER UPON MEDWAY COUNCIL Finance Department (Riverside, Chatham)

Re-advertisement following Comparability Award

### COMPUTER MANAGER (3005)

Up to £10,500 p.a. (including Shift Allowance)

The Council is committed to a comprehensive computer development plan including IDMS, PROSPER and MINIMAC.

The person appointed will be expected to have wide experience in both technical and managerial areas. The post entails leading enthusiastic development and operations teams, liaising with users to develop new applications and taking a leading role in forming the Council's computer development policy.

Generous relocation expenses.

Progression up to a salary of £11,850 may be achieved on performance appraisal after a period in the post.

Application form, job description, etc. from: Personnel, Council Offices, Frindsbury Hill, Strood, Rochester, Kent ME2 4HR. Telephone: Medway (0634) 75754 (24-hour service).

Closing date: 1st May, 1980.

(610)

# Systems Analysts

## Escape the South East for a lot of sophistication and good money in the North East.

Joining Corning (UK), the manufacturers of 'Pyrex' in the North East means a whole new way of life. Some of England's most lovely and unspoilt countryside is on your doorstep, there's good housing at sensible prices and travelling to work is easy. But that's where the simple life ends. Corning (UK) is an ambitious company which has for some time made considerable use of the most sophisticated computer systems in every facet of the company's operations.

We run an expanding Data Centre using a 4mb 370/158 running under MVS and it is the centre of the UK terminal network utilising the latest DB/DC systems. We also communicate with the Group's other two Data Centres in New York and Fontainebleau.

Your involvement will be in developing even further on a Group basis our already sophisticated systems especially in the Financial and Manufacturing Control areas. When this covers 6 operating divisions in the UK, you'll see the challenge. You'll also work with a dynamic management team where your talents will be recognised and rewarded. As well as the very attractive salary, pension scheme and relocation expenses to the Washington Data Centre, there's also the opportunity of working overseas with the Group. This sort of experience will fully prepare you for excellent career development.

If you're seeking sophisticated working in an attractive environment, contact:

Eric O'Hara  
on Washington (0632) 466660  
PER, Derwent House,  
Town Centre, Washington.

Applications are welcome  
from both men and women.

**CORNING**

IBM SYSTEM

GLASGOW

DEVELOPMENT

OPERATIONS

A major organisation is embarking on a far reaching systems development project. Developments will involve the design and implementation of advanced systems in most areas of the company including production control, stock control, finance, costing and general administration. The equipment is IBM and full use will be made of the latest software aids including DL/1, CICS and COPICS. Excellent salaries will be offered to the successful candidates. Full relocation expenses reimbursed in appropriate cases.

## Programming Team Leaders

to £7600

These positions must appeal to experienced programmers who wish to develop their careers by undertaking additional responsibility supervising the work of small teams.

Successful candidates will be COBOL programmers with about 3 years experience of medium scale IBM equipment together with a good practical knowledge of IBM software and OS operating system. (CW/8034)

## Analyst/Programmers

to £7100

These positions will offer a real opportunity for the successful candidates to develop their programming and design skills more fully into the area of analysis. Candidates must have from 18 months COBOL experience. Any mainframe considered as appropriate retraining will be given. Salary dependent on experience of specific candidates. (CW/8035)

PLEASE CONTACT IVOR NORTON, QUOTING APPROPRIATE REFERENCES, TO ARRANGE A CONFIDENTIAL DISCUSSION.

## Ivor Norton Management Services Ltd

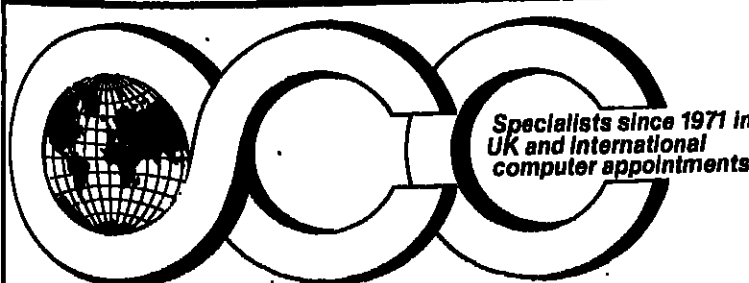
RECRUITMENT CONSULTING DIVISION

24 HOUR ANSWERING SERVICE  
(0423) 55311

LONDON  
52, Shaftesbury Avenue,  
London W1V 7DE  
01 734 8882

HARROGATE  
P.O. Box 83, Copthall Tower House,  
Harrogate HG1 1TS  
Harrogate 66828

GLASGOW  
11 Bothwell Street,  
Glasgow G2 6LY  
041 226 4811



### THE JOB

Working for the material supply section of our Client's organisation can be rewarding both in financial and career terms. Our client who will be interviewing on the 24th April, is looking for a number of people who can design advanced systems. With a materials value in excess of 2 billion dollars being handled every year, candidates need to be fully conversant with major business systems.

### WHO SHOULD APPLY?

Ideally candidates will possess a degree or similar qualification and be able to show relevant career progression culminating in the senior position which you will have held for some time. These are positions which not everybody will be suitable for, but for those of you who can meet the requirements the rewards are attractive and include: access to excellent recreational facilities, an attractive base salary, an expatriate premium, free medical care, contract completion bonus, subsidised accommodation and generous leave allowance.

The positions are open to both men and women. All assignments are on single status but married personnel will receive return leave every four months. The location is in the eastern province of Saudi Arabia approximately 15 K.M. from the Gulf Shores.



To find out more and register your application telephone 01-242 9356 and ask for Mike Mead or ring 01-807 7425 (evenings or weekends). Alternatively, write to OCC Computer Personnel, 16 Bedford Row, London WC1R 4EB quoting reference 915/CW/MM.

Computing  
Services  
Association

is it?